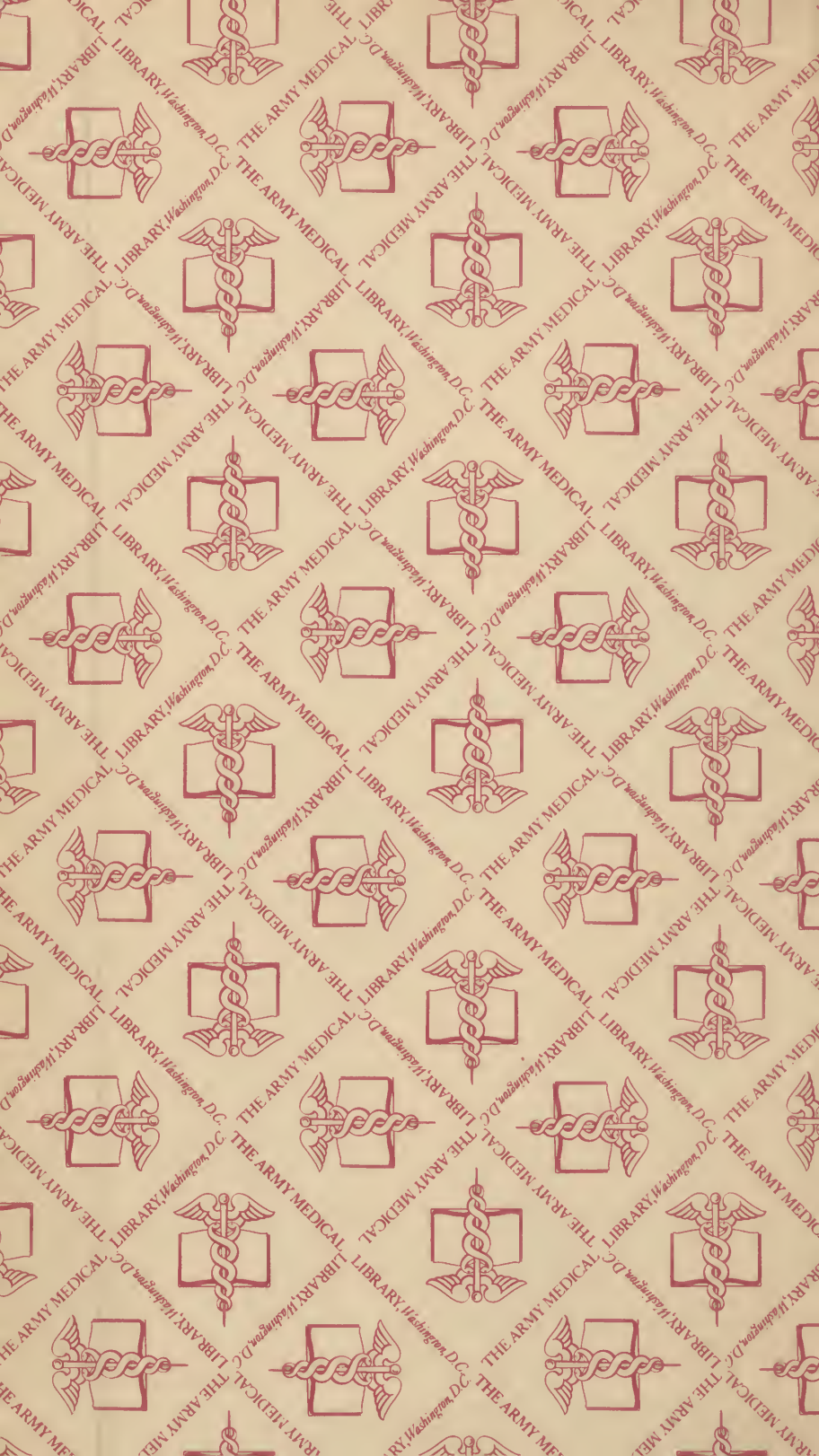
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LECTURES ON

CLINICAL MEDICINE,

DELIVERED AT THE HÔTEL-DIEU, PARIS.

BY

A. TROUSSEAU,

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VOLUME FOURTH.

TRANSLATED FROM THE EDITION OF 1868,

Being the Third Revised and Enlarged Edition;

BY

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Gentlemen:—We nearly always have some dyspeptic patients in the clinical wards. You sometimes see me prescribe alcalies, and at other times acids, to relieve the symptoms from which these persons are suffering. There are also cases in which I order preparations of cinchona, quassia, or strychnine; and there are others, in which I order opium, belladonna, and antispasmodics. In fact, I vary my treatment in an infinity of ways.

The reason of my thus acting, as if I had no fixed rules to guide me, really arises from there being nothing determinate in dyspepsia itself. In it, more than in any other morbid condition, the physician, free to act on the suggestions of the moment as they arise, is forced to feel his way as he proceeds, inquiring into the indications, which vary with the case, with the person, and which may also differ in the same person at different times. There is nothing surprising in this, when it is remembered that *difficulty of digestion*

—for that is the etymological meaning of the word *dyspepsia*, derived from the Greek word δυσπεψια—is a symptom common to a host of acute and chronic diseases; and that it is subordinate to morbid conditions differing very much from one another, even when it is so predominant a feature as to seem to be entitled to be regarded as a pathological species.

I take up this subject to-day, without the least intention of attempting to give you a complete account of dyspepsia. I only propose to enter into some general considerations, to lay before you some of the cases which I have seen, and to formulate some of the indications which most frequently present themselves at the bedside. I shall not shrink from going into details, which, in a subject so vast and so obscure, appear to me to be of greater practical utility than a dogmatic description however elaborate.

A short preliminary excursion into the domain of normal physiology is requisite, to enable you to understand the facts which I shall have to lay before you.

There are three things which have to be considered in the performance of every function, as has been said by Professor Récamier, one of my most illustrious predecessors in this chair; viz. the *stimulus*, the *support of the stimulus*, and that which he called *reciprocal capacity* [*capacité réciproque*]. This last expression is not, perhaps, very clear; and I shall, therefore, substitute for it *functional relation* [*relation fonctionelle*], which is more intelligible. By "support of the stimulus," Récamier understood the organ in its totality with its anatomical and physiological accessories, the functional apparatus which ought to be in communication with its physiological excitant, its stimulus, the excitant of the stomach which is all that brings the support into operation. Aliment is the stimulus, the excitant of the stomach which is the support of the stimulus: and light is the normal excitant of the eye. The "reciprocal capacity," which I propose to call the "functional relation," is the mutual bearing on each other of the support of the stimulus and of the stimulus itself; and it is from this mutual bearing that there results the normal performance of the function.

Having made good this position, let us endeavour to study the different modifications which may take place in the support, and in the stimulus: let us see what are the results and modifications in relation to the function.

Suppose, for a moment, that the support of the stimulus is normal,

and the organ healthy; and suppose, at the same time, that the stimulus is abnormal, it is evident that there will be disturbance of the function. Take the eye, for example, and apply to it light differing in quality and in quantity from that which it habitually supports, and you will produce functional disturbance of vision. Or, make your experiment on the stomach—give it aliment of abnormal quantity or quality—and you will induce a perturbation of its functions.

Suppose, on the contrary, that there is an abnormal disposition of the normal stimulant, and also of the support of the stimulant. In the case of the eye, suppose the light, sufficient in quantity and normal in quality, acting upon the morbid organ in one or another mode: in the case of the stomach, suppose food to be given normal in quantity and quality, but that the organ from some cause or another is not in a proper state to receive it, and the functional relation no longer existing, the physiological action of the organs will be—as in the first hypothesis—necessarily disturbed.

It may happen, however, that although both the stimulus and its support are in an abnormal state, the functional relation may remain in a regular state up to a certain point. This is what I have called the accidental or fortuitous functional relation [*relation fonctionelle accidentelle, fortuite*] in diseases. For example, it may happen, that the eye may be to a certain extent in a morbid state, and that the light may likewise reach it in a form and in quantity which are not normal: under such circumstances, the light becomes adapted [*coadaptée*], if I may use the expression, to the morbid state of the eye, and thus vision is accomplished. Let us apply this illustration to the stomach. If we administer to the stomach when in an abnormal state, an aliment which is to a certain extent abnormal in respect of quantity and quality, the functional relation will be established accidentally and fortuitously. Digestion will be performed in a nearly normal manner, although neither the stimulus nor its support are in a quite regular state. In virtue of this accidental functional relation, some empirical methods of treatment prove successful in certain diseases of the stomach in which the food administered to the morbid organ is perfectly well borne by it, which would not have been the case had the organ been in its normal physiological condition.

Man is unquestionably the animal capable of becoming most easily adapted to diversities in the external circumstances necessary for maintaining life. The first individual of our species did not

assuredly come into existence in lat. 50°: his body not being protected by hair or feathers, like other animals of the higher classes, proves that the Creator called him into being in a climate sufficiently mild to enable him to dispense with clothes, which in our climate are absolute necessities. However, the territory of man's origin becoming over crowded, emigration took place to other regions. Covering the surface of the globe from north to south, and from east to west, everywhere adapting itself to new climatological conditions, the human race became able at last to live as well in polar as in equatorial regions. This adaptation, however, to the greatest possible diversity of climate is perhaps less remarkable than the adaptation of man to great diversity of food. Advancing from the simplest possible regimen, consisting principally of slender rations of vegetables such as rice, with water and a little milk for drink, a regimen similar to that which the Indians and other peoples still subsist on, man has reached that generous fare of northern nations which contain so large a proportion of animal food. His organization has become habituated to conditions totally different from those in which he was originally placed: it has well adapted itself to them, and has by means of the new regimen, made the man of the north, a much more vigorous man than the man of the equator.

This wonderful faculty of adaptation to circumstances, belongs not only to individuals of the same species taken separately, but also to different organs of the economy.

The support of the stimulus, the organ remaining in a normal condition, becomes at last adapted to the action of an abnormal stimulus. It is true that, at first, the result is a certain amount of morbid action; but in virtue of the aptitude to accommodate itself to a change of circumstances, the economy is modified and rearranged in harmony with this new impression; and after some time, the organs getting into tune with the new stimulus, the functional relation is established with regularity.

Under certain circumstances, the physician, assisting nature, may contribute to place persons in favourable, accommodating conditions: he may do this by means of employing pharmaceutical and physiological alteratives: he may be able to establish, for a longer or shorter period, accidental functional relations. He may be able to accomplish for particular organs, the same that he can effect for the entire economy. For example, in respect of the stomach, the organ with which at present we are more particularly engaged, it may be placed

by the physician in the conditions specially required to regulate the acts which it is destined to fulfil.

Let me now deal with my subject in a more direct manner. In relation to the stomach considered as a support of the stimulus, we must take into account its anatomical structure, or in other words, its muscular and mucous coats, its glandular, circulatory, and nervous systems: we must also consider its movements and its secretions: we shall then see what are the modifications, organic and functional, which produce that condition which we call *dyspepsia*.

First, then, Gentlemen, in what manner, and under what influences are the secretions of the stomach modified? They are modified by excess or insufficiency of a stimulus.

In an animal into whose stomach a fistulous opening has been formed, a great quantity of gastric juice can be caused to flow by merely exciting the mucous membrane, by introducing a glass tube into the stomach through the artificial opening. By this excitation, there is produced a secretion which in respect of quantity is extra-physiological, but, in respect of quality, is quite normal. Should the excitation, however, be increased beyond a certain degree, it becomes inflammation, the secretion of gastric juice ceases, and from the fistula there flows only mucus.

Similar disturbances occur apart from any mechanical excitation. Under the influence of fever, which is perhaps nothing more than a great modification of the functions of innervation of organic life, the secretion of gastric juice is disturbed and arrested. This experiment has been made not merely once, but many times, by Professor Claude Bernard.[1] By producing fever at pleasure, in animals, in which he studied the phenomenon, he was able to suspend the secretion of the gastric juice, although, there was no inflammation of the mucous membrane of the stomach—although, consequently, there was no trace of gastritis to explain the occurrence.

And, Gentlemen, observe, that what takes in respect of the stomach is not at all different from what we see elsewhere every day. When the first phenomena of inflammation have disappeared after the occurrence of a traumatic lesion, and the condition is progressing to resolution, we may regard every cell of adventitious tissue as

[1] Claude Bernard —Leçons sur la Physiologie et La Pathologie du Système Nerveux. Second vol. p. 374. Paris: 1858.

a little stomach into which the arteries pour the food, and from which the veins and lymphaties carry away the residuum, after the functional plastic exudation has taken place. In the particular case, the functional exudation, accidentally normal, consists of plastic lymph and pus. Should fever light up, we see the secretion from the cellular tissue become modified, and the tendency to consolidation become arrested — the semi-cicatrised wounds reopen, and secrete an ill-conditioned ichor, as different from plastic lymph and normal pus, as the mucus of the stomach is different from gastric juice.

You know, Gentlemen—and it is again to Claude Bernard that you are indebted for the information—that section of the pneumo-gastric nerves causes an immediate suspension of the movements of the stomach, and a diminution in the secretion of gastric juice. You know also, that when, in our experiments on animals, we irritate the ganglia of the great sympathetic, which send nervous filaments to the stomach, energetic contractions of the stomach are produced, and the gastric secretion becomes more abundant. We thus obtain a demonstration of the changes which take place in the stomach when the cerebro-spinal and sympathetic systems are acted upon.

To come closer to a class of facts which are more clinical in their bearing, I ask:—who has not seen the influence on digestion of deranged innervation? Who does not know that great mental emotion suspends digestion, and induces indigestion? Who does not know that prolonged anxiety produces a very injurious influence on the digestive organs, and is a frequent cause of dyspepsia?

Local pains, neuralgia of the stomach and intestines, likewise disturb the secretions of the digestive organs. The same takes place in respect of them, as in respect of other organs. Neuralgia of the eye brings on a more or less violent congestion of the parts, raises their temperature, and increases the secretion of tears: in the same way, neuralgia of the stomach produces analogous effects upon that organ, augmenting its secretions to such a degree that they are poured forth, not only when food is ingested, but, also, irrespective altogether of digestion.

These are some of the effects consequent upon augmented normal excitation; and we shall now see what the results are of this same augmented excitation when it has been too long continued. I have often spoken to you of the effects produced on the economy by the abuse of excitants: I have told you that, if an organ is subjected to

excitation repeated too often, or pushed too far, it ceases to respond to its stimulus, and that that state is soon induced which Brown called "asthenia." What was his explanation of asthenia? Let me now repeat what I have so often impressed upon you on other occasions; and I make this repetition without any scruple, for it is most important that you have should a correct understanding of these views, the only opinions, perhaps, really judicious and practical which are embraced in the great theory of the Scottish physician.

Brown, convinced that life was maintained solely by excitants (an opinion nearly the same as that afterwards taught by Broussais), thought, that every organ was endowed with a peculiar capacity for excitation, to which he gave the name of "excitability;" and he believed that this excitability was exhausted by being merely brought into exercise. He said, for example, that the brain, the spinal marrow, and the muscles, have an aptitude to enter into simultaneous action, to execute the function of locomotion. Now, if the excitation exercised by the mind upon the muscles through the medium of the spinal nervous system, which it commands, is exercised for too long a time, the nervous system and muscular apparatus will at last cease to respond to the cerebral excitation, whereupon they will lose their capacity of being excited—their excitability—and will fall into a state of *asthenia*, which may here be interpreted *powerlessness*. According to Brown, it was only by means of repose that the muscles and the nervous system could regain their lost capacity for excitability. But if excitation is continuously carried beyond its normal limits, the excitability exhausts itself in a proportion greater than that which can be restored by repose; so that the being habitually excited will deprive the organs of the power of bringing into play the normal stimulus to which they formerly responded, and will cause them to require a more powerful stimulus. Let me give you an example:—The eye accustoms itself to support light in certain proportions, regular in respect of quantity and quality. Suppose that we represent the quantity by the figure 10, and assume that the visual apparatus is in a normal physiological state: let us assume that this quantity of light (the eye remaining in its previous condition), is suddenly increased to 20, the result will be the production of that peculiar abnormal phenomenon called *dazzling*. It is not asthenia; for if only 10 degrees of light are again afforded to the eye, it will regain the regularity of its functions which were temporarily disturbed. But if, in place of quickly and temporarily

augmenting the stimulus it is gradually augmented—if day by day, the eye is accustomed to a stronger and stronger light—the time will come when the visual functions will be performed under the influence of that strong light, exactly as they were originally performed with a much feebler light: moreover, the time will come, when vision will be impossible unless the eye receive an amount of stimulus in excess of the originally required quantity. In an individual, therefore, who has been accustomed for six months or a year to 20 degrees of light, and all at once receives only 10, the excitation of the retina produced by this diminished quantity of stimulus will no longer be sufficient to bring the visual functions into play. Under the influence of an excitation greater in amount and constantly repeated, the excitability of the organ is exhausted, and asthenia is produced: the result is inability of the eye to perform its function, unless it have a quantity of stimulus twice as great as that which originally sufficed.

Similar results follow similar causes in the stomach. An individual, for example, lives on plain fare, partakes very sparingly of spiced dishes, abstains from condiments, and drinks alcoholic liquors in small quantity: the stimulus and its organic support—that is to say, the food and the stomach—are in a state of functional relation which is perfectly sufficient and normal, so that digestion is performed with regularity and ease. But the individual, little by little, increases the quantity of spice taken with his food; day by day, he uses a little more alcoholic drink; and, in a word, he takes more excitants. He may, on the first day, have suffered from this change of regimen, but he soon becomes accustomed to it, and in proportion to the gradual augmentation of the stimulus, there is, on the part of the stomach, a gradual adaptation to the new impressions. What would take place, if this individual were abruptly to resume his former style of feeding? The stomach being imperfectly excited, would not yield its necessary secretions, and difficult digestion would be the consequence. To combat this dyspepsia, you would then be obliged, either to act in accordance with Brown's recommendation and keep the organ at rest for a certain time, to enable it to regain its original excitability, lost through abuse of excitation; or, else, be forced to resume the excitants to which the stomach had become habituated, and even to have recourse to other excitants more and more energetic.

In the remarks which I have now been making, I have only had

in view what takes place in respect of the secretions of the stomach; but it is also very necessary to take greatly into account the muscular apparatus of the stomach, which is as essential as the secretory apparatus, for the performance of the function of the organ. Unless the movements of the stomach and intestines take place with perfect regularity, digestion cannot be accomplished in a normal manner. Now, there are different ways in which the gastro-intestinal muscular system may be disturbed. Its excitability may be diminished, enfeebled, when the individual will digest badly, because (if I may so express myself) there is an arrest in the contractions of the stomach: on the other hand, the excitability may be increased, when the individual will no longer digest rightly, because the contractions of the stomach are too frequent and too energetic.

In the latter case, the alimentary substances will be propelled quickly from the stomach into the duodenum, where they will arrive imperfectly chymified or not chymified at all. Being insufficiently prepared for the new process to which they are submitted in the first portion of the intestine, their digestion will go on badly, and dyspepsia will be the result.

Just as we have seen in respect of the gastric secretions, the increased contractility of the stomach may depend upon the supervention of a disturbance of the nervous system—of the cerebro-spinal system, consequent, for example, upon mental emotion—or of the ganglionic system. Likewise, also, the cause may be the abuse of excitants taken into the stomach, they acting more or less directly upon its contractile apparatus.

In the same way, also, that increased and long continued excitation of the secretory system leads to asthenia of that system, so does long continued augmented contractility produce asthenia of the muscular apparatus. This asthenia has also, however, other causes, and one of them, which is not unusual, is taking food in too large quantities, so as to cause abnormal distension of the stomach. There then occurs in respect of the stomach, what occurs in respect of the bladder when, after prolonged distension from retention of urine, it becomes paralysed, in consequence of forcible distension having annihilated the muscular tonicity. The same thing takes place in the other hollow organs.

As I have been saying, this is not an unusual cause of asthenia of the stomach. It is observed in great eaters, like those whose histories you will find in books, who devour from sixty to eighty pounds

of food in twenty-four hours. In these persons, the stomach becomes distended to such a degree as to assume the capacity of the rumen of an ox. You can understand that the organ, from being thus distended, will lose its muscular tonicity, and that after a certain time, to revive it, it will be necessary to have recourse to the use of artificial excitants, the energy of which will have to be increased in proportion to the deficiency of contractility, to the asthenia, which is progressing day by day.

This muscular asthenia of the stomach, provided the exhaustion of excitability depend on that species of paralysis which is produced by forcible distension of the organ, like secretory asthenia, is the immediate cause of the dyspepsia to which great drinkers and large eaters are subject. We shall see how such patients have to be treated: we shall see that they require particular treatment which is much more efficacious in this than in other kinds of dyspepsia.

There is another form of asthenia which has strange characteristics of its own: it is observed in the muscular apparatus of animal life, and probably has its analogue in the muscular system of organic life. This singular affection, to which I have long directed my attention, has certainly been seen by a very large number of practitioners, and yet it has never been studied in relation to its special character.

The name which I have given to this neurosis is "exhaustion of incitability" [*épuisement de l'incitabilité*]. Let me give you an illustrative case.

At Tours, ten years ago, I saw a young, newly-married lady, who had nothing the matter with her health, except the strange nervous affection of which I am now going to try to sketch the picture. She described herself as being paralysed: but upon examination, it was found that the powers of motion and sensation were intact. When the patient was asked to rise and walk, she did so in a deliberate manner, and with perfect precision and exactitude. Scarcely, however, had she proceeded fifteen paces, when she was observed to walk with less confidence, and after a few hesitating steps, she sunk down, and was unable to proceed another yard. I then caused her to be seated; and before a quarter of an hour had elapsed, she had regained her powers, and was once more able to walk the same short distance which she had previously accomplished. When interrogated as to the nature of her sensations, she replied, that after walking some steps, she felt such an extreme degree of fatigue, as to be unable to

proceed any further: she compared the sensations which she experienced to feelings she had sometimes had when in health after a very long walk. The condition, therefore, was really not one of paralysis, but of exhausted excitability. Since the occurrence of that case, I have met with many persons presenting exactly similar symptoms. They all recovered—the majority under hydropathy and sea-bathing —some under electricity—and others under treatment by preparations of nux vomica.

Let us now return to the subject of dyspepsia.

Hitherto, Gentlemen, I have only referred to what is called in scholastic language, *idiopathic* dyspepsia, that is to say, dyspepsia in which the cause is directly referable to the stomach as the seat of the disorder—dependent upon the state of its own internal organization, or dependent upon implication of that portion of the cerebro-spinal or ganglionic system which presides over its muscular movements and secretions. I have now to speak of those forms of dyspepsia which may be called *symptomatic*, those in which disorder of the function of digestion is merely the influence on the stomach of disturbance which has supervened in other organs with which the stomach has more or less intimate relations. The forms of symptomatic dyspepsia to which I allude, or these sympathies, if you prefer that expression, demand our serious consideration.

Disorders of the intestines, particularlarly constipation, here occupy a prominent place. It is a striking fact, that in the majority of dyspeptic patients, the bowels are moved seldom, and with difficulty. Is this the cause or the consequence of the dyspepsia? We can understand that from the mere circumstance of an individual eating little, the fæces will be less in quantity, and that in this sense, dyspepsia may be said to produce constipation; and we can also understand that the constipation may lead to disorder of the digestion. When an opportunity occurs for my addressing you on the subject of diarrhœa, I will show you that affections of the large intestine, that irritation of the very lowest part of the digestive canal suffice to excite a flux from the ileum—anal irritation producing its influence upon the small intestine. This sympathy between the large intestine and the other parts of the intestinal canal, is illustrated by the most common everyday experience: for example, indigestion will be produced by a lavement taken immediately after a meal by one unaccustomed to such a proceeding. If in place of taking a lavement, the individual introduces a suppository, a similar result is produced,

or at least there pass stools, which at first are solid, being the contents of the rectum and colon, and are afterwards liquid or semi-liquid, formed by the contents of the cæcum and lower portion of the small intestine. Notwithstanding such decided effects, the suppository need not have penetrated more than four or five centimeters within the anus: but this local limited irritation is propagated much farther by sympathy. Any irritation of the lower portion of the large intestine will act in the same way, and will not only produce semi-liquid evacuations, frequent desire to go to stool, and tenesmus of the rectum from local irritation, but will likewise give rise to liquid excretions, an abnormal liquid secretion from the intestines, a diarrhœa often profuse and intractable, in consequence of the local irritation which causes it being permanent and not temporary like the suppository.

It is evident, therefore, that there exists a synergy in the different portions of the muscular apparatus of the digestive canal, in virtue of which the large intestine exercises a sympathetic influence upon the stomach and small intestine, in the same way that the stomach and small intestine may act on them; so that the regularity of the contractions in one part are dependent upon the regularity of the contractions in the other.

You can now understand how constipation may be a cause of dyspepsia. The large intestine being sluggish, that is to say, its muscular apparatus contracting badly, that of the digestive canal, and that of the stomach, likewise relax their movements, so that digestion becomes slow and difficult. There then occurs a state the opposite of that which I described in relation to diarrhœa. So true is this, that there are some patients in whom nothing more is required for the cure of the dyspeptic symptoms than to induce regular action of the bowels by rousing the muscular synergy of the intestines by administering the ascending douche or simply by giving lavements.

Here, Gentlemen, we have to consider a matter of detail in the differential diagnosis. Pains in the transverse portion of the colon are often mistaken for pains in the stomach. It is no exaggeration to say, that perhaps in half the cases which are called gastralgia—particularly in old and elderly men, and in a great many young women—the affection is nothing more than colalgia. That such a mistake should be made is not remarkable, when we consider the anatomical relations of the transverse portion of the colon, which is

situated in the epigastric region, contiguous to the great curvature of the stomach. The pain felt by the patient may then be attributed not only by him but also by his physician, to the stomach, in the same way that pain developed in one of the hypochondria, and having its seat in the ascending or descending colon is often supposed to be hepatic or splenic pains, merely from the relations which these parts of the intestine have at certain points in their course, one with the liver, and the other with the spleen. Upon carefully questioning the patients, it is found, that the so-called gastric pains supervene, not during the first stage, but in the latter hours of digestion; that they are coincident with obstinate constipation, or sometimes, are followed by diarrhœa accompanied by a more or less profuse excretion of mucus, with which the fæces are covered; and that sometimes also, when the alvine evacuations have been kept waiting, or are passed with pain, they have the appearance of bands or white ribands, which have been compared to pieces of macaroni. These mucous excretions are often mistaken for fragments of tapeworm; and every practitioner has had to correct mistakes of this kind, and to reassure patients labouring under the belief that they had passed fragments of a parasite which they then were exhibiting to their medical adviser. Be that as it may, obstinate constipation may become the cause of real inflammation of the colon, accompanied by enteralgia which may be taken for gastralgia, although there is nothing wrong with the stomach. I repeat, however, that functional disorder of the large intestine very frequently leads to functional disorder of the stomach, so becoming the starting-point of dyspepsia.

Dyspepsia is a very usual epiphenomenon of disease of the liver: and it is easy to understand, that an organ which is the largest gland in the body, is immediately related to the stomach, performs a very important part in digestion, has exceedingly intimate sympathies with the other parts of the gastro-intestinal apparatus—it is easy, I say, to understand, that the disturbed action of which it is the seat reacts more or less powerfully upon the functions of the stomach. Hepatic, will also often be taken for gastric pains. We shall have occasion to revert to this fact when we come to study hepatic colic. The occurrence of errors in diagnosis are quite accounted for by what we know of the relations of contiguity between the stomach and liver.

Renal affections, or to speak more correctly, affections of the

urinary apparatus, are likewise frequent causes of dyspepsia, particularly in old men. When you are consulted by elderly patients, who complain of impaired digestion, loss of appetite, gastric pains, belching, and vomiting, direct your attention to the state of the kidneys and bladder, and you will often find that the only urinary symptom complained of is habitual retention of urine.

The relation which diseases of the uterus bears to the development of dyspepsia is not less remarkable. We ought not, however, to be surprised at this, if we bear in mind the important part which the function of generation performs in the female economy, and recollect the powerful effect produced upon the whole system—particularly local and general effects on the nervous system—by the mere physiological modification of the state of the reproductive organs. These disorders of innervation, which show themselves, moreover, by an assemblage of symptoms (not necessary to be now described) suffice to explain the derangement of the digestive functions which frequently supervene. Every one knows, that in many women menstruation is accompanied by gastric disturbance. Does not this gastric disturbance, of which vomiting is one of the most marked symptoms, sometimes become very serious during pregnancy? It is not surprising, then, that pathological changes in the uterus of a more or less serious character, should act in a manner similar to the physiological changes which the organ undergoes. Dyspepsia is almost the necessary concomitant of chronic affections of the womb characterised by catarrhal discharges, by leuchorrhœa, and by other local symptoms with which you are acquainted. It must not, however, Gentlemen, be forgotten, that leuchorrhœa is often not the cause, but the effect of the dyspepsia by which the menstrual function is disturbed and the catamenia suppressed: it must not be forgotten, that many patients attribute to the leuchorrhœa by which they are tormented, the stomachic symptoms from which they suffer, while, in reality, the stomachic is the starting point of the uterine disorder.

Among the exciting causes of dyspepsia must be reckoned diseases of the heart, nearly all of which in their latter stages are accompanied by a disturbance of the digestive functions tending to accelerate the fatal issue.

The disorders of the digestive functions so commonly associated with the different cachexiæ, are more frequently met with in patients of tubercular diathesis than in any other class. Dyspepsia not only

shows itself in the last stage of pulmonary phthisis, but in some cases, it also supervenes as one of the symptoms of the incipient malady before the other signs of the thoracic disease are in any way declared. Under such circumstances, it often misleads the physician, who, although he take every means of detecting them, frequently fails to detect any material lesions, and concludes that the case is one of idiopathic dyspepsia, although, in reality, the disturbance of the digestive functions is only the indication of an organic disease which will burst forth at a given moment, exhibiting its peculiar characteristics.

There is also another class of causes of dyspepsia to which I must solicit your attention. I do not at present mean to refer to those forms of dyspepsia which are associated with the gouty and rheumatic diathesis, for I shall afterwards speak of them in a more special manner, when I lay before you the history of gout: at present, I propose only to speak of those dyspeptic affections which are dependent upon the herpetic diathesis [*diathèse dartreuse*]. The stomachic affections which are coincident with cutaneous affections, and often are, nay most frequently are, coincident with the disappearance of chronic eruptions, or alternate with them, have always been recognised by observers. Apart altogether from the humoral hypothesis, the coincidence and alternation to which I refer is explained by the synergic connection of the external and internal tegumentary membranes. As was said by Lorry:—*Primarium cum cute condensum habet ventriculus.*

Gentlemen, I must enumerate to you the different kinds of causes by which dyspepsia is produced, for although they are all ultimately resolved into that increase or diminution of the activity of the gastric secretions which I have stated to be the proximate cause of dyspepsia, it is essential to establish the differences which exist between that dyspepsia which is symptomatic or sympathetic, and that which is idiopathic. In a nosological point of view this is necessary, but in respect of treatment, it is still more requisite to do this. To combat the one, we must direct our measures directly to the stomach; but to combat the other, we must first of all combat remote causes, that is to say, organic affections, diseases which have in the first instance attacked another apparatus.

Forms of Dyspepsia.—Dyspepsia associated with Chronic Gastritis.—Boulimic Dyspepsia.—Flatulent Dyspepsia.—Acid Dyspepsia.—General Disturbance of the System caused by Dyspepsia, such as Anæsthesia, partial Analgesia, Neuralgia, and Disturbance of the Intellectual Faculties.—Disturbance of the Circulation.—Anæmia.

Before entering upon the question of treatment, there is another point which we have to study. Dyspepsia, whatever its nature may be, does not always present the same characters. Let us attend to its principal forms.

One of its forms is associated with chronic gastritis. In inflammation of the stomach, its muscular fibres lose the normal regularity of their movements: and the secreting function of the organ is disturbed. This kind of dyspepsia is accompanied by loss of appetite, and a bitter taste in the mouth. The tongue is generally covered with sordes. Nausea, vomiting, and retching commonly occur. There is frequently vomiting of food, preceded or followed by vomiting of a glairy matter, usually called "phlegm" [*pituite*]. Sometimes, though rarely, the ejecta are acid. Frequently, there are corrupt-smelling eructations, tasting of hydrosulphurous acid gas, or as the patients say "tasting of rotten eggs."

It will generally be easy for you to ascertain the cause, when dyspepsia presents itself under this form. Temporary irritation, such as is occasioned by a fit of indigestion, will be the starting point of the symptoms which will be as transient as the affection originating them; but in other cases, when the dyspepsia has become chronic, you will find that it is dependent upon permanent irritation of the stomach, upon chronic gastritis, an affection the existence of which has been denied with far too much dogmatism in recent times.

Gentlemen, every one of you knows how leading a part has been played in pathology during the last fifty years by gastritis, acute and chronic: or at least, how great a part has been assigned to it by Broussais and his followers. Exaggerating the import of the facts which he observed, and reverting I may say to the theories of Van Helmont, who placed in the epigastric centre the principal *archæus*,[1]

[1] Basil Valentine invented the word *archæus* (French, *archée*) from αρχη,

to the empire of which he held that the whole economy is subservient—going even beyond these theories, Broussais maintained that the cause of all diseases is in the mucous membrane of the stomach. He maintained that inflammation of that mucous membrane was the source, not only of all phlegmasiæ and pyrexiæ, but likewise of nearly every morbid affection, both chronic and acute. The din of the famous controversies of that period, in which the doctrines of the Val-de-Grâce were supported and opposed, has been heard even in your time. Though the celebrated chief of the school of *Physiological Medicine* pushed his principles to excessive extremes, we seem, in the present day, to have fallen into opposite extremes, and, to avoid being reproached with the extravagancies for which Broussais is justly blamed, we are ready to argue that gastritis never exists.

There is a disposition to hold that the internal coat of the stomach is proof against inflammation, though no one denies that every other mucous membrane is subject to it. It is admitted that the mucous membranes of the nasal fossæ, pharynx, trachea, bronchial tubes, uterus, vagina, and even the mucous membrane of the intestine itself, are subject to inflammation; but it is alleged that the stomach is not under that liability. Is it not so in everything? The fear of falling into one particular evil, causes us to fall into another:—

In vitium ducit culpæ fuga, si caret arte,

as Horace said. In medicine, as in everything else, we hardly know how to keep ourselves within correct limits: for example, medical men, after believing that they saw gastritis in all diseases, now deny that it ever exists. Nevertheless, it does exist. Acute gastritis is a rare affection; but it is sometimes observed, and cases as to which there can be no doubt may be cited. Chronic gastritis is frequently met with. It is true that it often remains masked; but on making a study of the patient, we soon detect, under the veil which covers it, the gastritis which causes the more or less serious disturbance of digestion.

There is another form of dyspepsia in which *bulimia* takes the place of loss of appetite. The patient has a constant feeling of

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the beginning: it was afterwards adopted by Paracelsus and Van Helmont. By Van Helmont the chief *archæus* was regarded as an immaterial principle existing in the seed prior to fecundation, presiding over the development of the body, and over all organic phenomena. He placed this chief "archæus" in the upper orifice of the stomach: he said that besides it there are others subordinate to it, situated in different organs.—Translator.

emptiness in the stomach: two hours after eating, or it may be only one hour after his repast, there is a keen renewal of the appetite, which perhaps is not a real appetite, but only a craving for food. This hunger, even when it is satisfied, is accompanied by a great feeling of weakness, particularly in gastralgic women.

In this form of dyspepsia, neither eructation, flatulence, nor vomiting occur, as in that which I have just described. Constipation is one of its usual symptoms: sometimes, however, there is diarrhœa, the result of the food being too rapidly propelled from the stomach into the duodenum before there has been time for the accomplishment of the first part of the process of digestion—gastric digestion. I shall not upon this occasion repeat my previous remarks on the mechanism by which this is produced; and I shall also reserve some additional observations till I have to speak upon diarrhœa, when the details of the pathological physiology of this subject will be more in place. When we come to consider the treatment of that form of dyspepsia, we shall see that the diarrhœa may be combated by very simple measures, and that we are the more easily able to master it, the more directly we attack its cause.

Flatulent dyspepsia is characterised by the secretion in excessive quantity of the gases which are normally developed in the intestinal canal. Immediately after the ingestion of food, these gases are produced, more or less abundantly, in the stomach and intestines, which they distend; and this distension leads to such increase in the size of the abdomen as obliges the patients to loosen their clothes from inability to bear their tightness. An attempt has been made to explain this phenomenon by supposing that there takes place a rapid fermentation of the ingested feculent substances—that there is a production of carbonic acid gas, the result of a fermentation in the digestive canal exactly similar to that which occurs in the wine-maker's mash-tub. Matters do not, however, proceed after that fashion. As Graves remarks, persons subject to flatulence have gas developed in the intestinal canal with almost equal rapidity, whether they eat food which can ferment, or whether they confine themselves almost exclusively to animal aliment. In the latter case, one cannot say that there has been fermentation. That some gas is always produced from the alimentary mass during digestion is, however, a fact which is certain; but the principal source of the gas is secretion from the intestinal canal. A proof that this secretion is independent of the *coction* of the aliments is afforded by the fact that a hysterical woman

will sometimes become tympanitic in ten minutes: under our very eyes and hands we see and feel the abdomen attain a great size. That certainly could not be explained upon the fermentation hypothesis; for I am supposing the patient to be seen before or after a meal at a time when there could be no food in the digestive canal: but, granting that alimentary substances are present in the canal, it is impossible to admit that the fermentation takes place with such rapidity. Consequently, the formation of gas is the result of disturbance of the nervous system: an increased secretion of gas takes place exactly in the same way that there is under a similar influence an increased secretion of tears, saliva, or urine. This remark is important; for if, on meeting with such cases as I have now alluded to, you reason after the manner of the chemists who regard the stomach in the same light as the glass vessels in which they experiment; if you say that there is an excess of carbonic acid gas, and, that this being the result of fermentation, your business is to put a stop to that fermentation by the means which chemistry supplies for accomplishing that end—by acting thus, you will be mistaken if you suppose that you are curing the malady: for you do not really obtain any good result. If, on the other hand, you act the part of the physician, and have recourse to baths, cold affusions, and the administration of a few drops of ether; or if you employ any other treatment the good results of which you have learned from experience, your intervention will be useful. The flatulence which is characteristic of the form of dyspepsia of which I am now speaking, requires to be treated by remedies with which I shall make you acquainted.

There are cases in which the acids of the stomach are generated in large quantities. Almost as soon as the patients have swallowed their food, they have sour eructations; and after meals, they sometimes bring up acid matters in greater or less abundance. So great occasionally is the acidity of these matters, that without exaggeration it may be described as setting the teeth on edge like currant or lemon juice; and when received in copper vessels, they cover them almost instantaneously with a green coating of lactate of copper. This you have had frequent opportunities of seeing at the bed-side of the young girl of bed 27 St. Bernard's ward, who has every day been vomiting an acid fluid such as I am now speaking of. A chemical explanation of what takes place in such circumstances has not been wanting. It has been said that the glucose contained in the food,

having undergone digestion in the stomach, is transformed into sugar, which sugar is transformed into alcohol: but here chemistry is again at fault, for the formation of acid products is often more abundant when the patients are fed on animal food, than when their diet consists of starchy substances. The very opposite of this, however, sometimes occurs. Nevertheless, it is sufficient in some cases similar to the first to have clear proof that the acids of the stomach are the result of a peculiar secretion, and not of a mere chemical decomposition as some allege. Graves taught in 1828, and Berzelius repeated the lesson seven years later, that the acid secretion owes its acidity to lactic acid. The abundance of this secretion in the form of dyspepsia now under consideration is due to a peculiar excitation of the gastric mucous membrane, an excitation wholly under the influence of the nervous system which presides over the secreting organs.

Whatever forms they may assume, the disorders of the digestive functions have an influence upon the whole economy, the effects of which, however, are chiefly seen in the nervous system, in the moral powers, and in the constitution of the blood, thus giving rise to what Beau has called the secondary symptoms of dyspepsia.[1] So great is this influence, according to my honourable colleague of the Hôpital de la Charité, that certain diseases are sometimes purely symptomatic of the gastric affection. It is so not only in hypochondria, which, according to many physicians, is related to dyspepsia, but also in other diseases, among which hysteria may be mentioned. Without adopting this view of the matter, which seems to me to be rather far-fetched and calculated to lead us back in some degree to the theories and doctrines of Van Helmont, I consider that it has the merit of keeping prominently in view an important element, a serious complication of these diseases, which the talented observer whom I have named erroneously regarded as caused by dyspepsia, while they are only aggravated by it.

In relation to the effect which dyspepsia produces upon the nervous system, Beau has laid great stress upon the fact that nearly all dyspeptic persons labour under nervous symptoms, analogous to those from which hysterical women suffer. He says that nearly always in both classes of patients there are peculiar disorders of sensation, symptoms of analgesia and of partial anæsthesia occupying sometimes one point and sometimes another point in the skin, in the

[1] Beau:—Traité de la Dyspepsie. Paris: 1866.

hands, arms (particularly the internal surface of the forearms), the trunk, or the face. This paralysis of sensation is sometimes so decided, that one may pinch in the most vigorous manner, prick the skin, and even transfix it with a needle, without the patient feeling what is being done. I have on many occasions repeated this experiment in your presence, so that from your own observation you can verify the statement I have now made. Sometimes patients, while they lose the sense of pain, retain tactile sensation: they distinctly feel when they are pricked, pinched, or touched: they tell you even when you prick them or pinch them, and yet they experience no pain.

Along with this analgesia and anæsthesia there are often symptoms of local neuralgia—neuralgia in the neighbourhood of the parts struck with paralysis of tactile sensation.

The influence of dyspepsia upon the nervous system extends to the intellectual and moral faculties. You all know, and some of you perhaps know from sad personal experience, that difficult digestion greatly interferes with intellectual work, impedes the expression of thought, and that, when the difficulty is habitual, the disturbance of the gastric functions assumes the character of melancholy and hypochondria. You will often meet in dyspeptic persons with great mental lethargy, showing itself in an inaptitude for work, sometimes in an impossibility of forming or clearly expressing ideas. Some tell you, that their memory is gone: and many complain of pains and weight in the head, accompanied by a very distressing feeling of emptiness. It is in such cases that there supervenes *vertigo a stomacho læso*, an affection regarding which I recently addressed you in a special lecture.[1] After meals, the patients experience an invincible tendency to sleep, a sort of torpor or at least an insurmountable repugnance to move: their sleep is disturbed by agitating dreams, and nightmares. Generally, the persons thus affected have an excessive degree of nervous irritability. They are melancholy, morose, exceedingly pusillanimous, and so irascible that they cannot bear to be thwarted in the slightest degree either by word or deed.

When the disease goes on for a certain time, the influence which it exerts upon the constitution of the blood is shown, by symptoms to which Dr. Beau has given the name of "aglobulie." This

[1] See page 537 of Third Volume of this translation.

diminution in the quantity of red globules along with an increase in the normal quantity of the serum, is characterised by phenomena which it is hardly necessary to describe in this place. The integuments have lost their colour, and probably present that pale yellow hue, which is met with in anæmic subjects. The patients are liable to buzzings in the ear, disturbed vision, and palpitation of the heart. On auscultation of the heart, an anæmic blowing sound is heard at the base, which is prolonged into the cervical vessels. Ultimately, there is met with the entire series of nervous symptoms which peculiarly belong to individuals whose blood is impoverished. When this impoverished condition of the blood proceeds to an extreme degree, the disorders of the circulation may occasion œdema of the extremities and anasarca, although it has been alleged that the latter is not met with in the circumstances now described. Sometimes there is even slight passive interstitial hemorrhage, spots of purpura, for example, appearing on different parts of the skin.

The emaciated condition of the patients shows the greater or less disturbance of the nutritive functions. But the disturbance of nutrition, is characterised by a special sign to which Beau was the first to call attention. It is the *ungual furrow*. This ungual furrow is a transverse groove in the nail, such as would result from a loss of substance in the external layer. This appearance admits of being remarkably well studied in the nail of the thumb: from the thickness of this nail, the furrow is more marked. The ungual furrow met with in diseases of long duration, such as serious fevers, is hollowed out more or less deeply and is more or less wide. It often happens that there are several furrows arranged in series and separated the one from the other, by spaces in which the surface of the nail is uneven, rough, and sensibly less elevated than the rest, presenting sometimes a milky colour, and on pressure showing an evident diminution of thickness.

The cachectic condition into which patients fall, who have been long subject to dyspepsia, frequently misleads the physician and induces the belief that there exists a bad diathesis. The idea suggests itself that there is pulmonary phthisis, a supposition all the more natural, that there exists cough, the frequent accompaniment of gastric disturbance. This cough, the cough which so often accompanies gastric disturbance, is dry, coming on in isolated attacks or in urgent fits, accompanied by a very painful feeling of strangulation and angina, occurring periodically in paroxysms at

certain hours, particularly in the evening. This stomach cough excites serious anxiety as to the state of the chest, which does not always upon examination dissipate the fears which have been formed: it is in some cases only after repeated examinations that it is admitted, that no signs of tuberculization exist. This supposition that there is tubercle has all the more appearance of being correct, from cough, emaciation, and debility, being present, frequently co-existing moreover with neuralgic pains in the walls of the chest, particularly in the back, whence they shoot into the sides. Although the absence of the tuberculous diathesis diminishes the gravity of the prognosis in these cases, it is necessary to be aware of the fact that dyspepsia in this extreme stage, and presenting all the characters to which English physicians have applied the name of "dyspeptic phthisis," is in truth a dangerous malady.

Gentlemen, if for convenience of description, and with the view of the better adapting them to their appointed places in nosological tables, we isolate from one another the different forms of the same disease, if we divide one malady into genera and species, in imitation of the methods adopted in the study of the natural sciences, it will be found that such classifications are seldom suitable in medicine. If, with a view to render our views more precise to those to whom they are addressed in lectures or in books, we are obliged to unite, to group together certain facts, in such a way as to form a more or less complete picture, we ought to recognise the fact, that all such classifications are artificial, and contain nothing positive, when tested by a comparison with the reality. In natural history, and in botany, the species have a certain number of characters, which are invariable and immutable, and which enable us to distinguish the one species from the other. This is not the case in pathology. The same disease is far from presenting immutable phenomena exclusively belonging to it: different species have characters in common, which commingle and blend with one another in such a manner, that the nosologist has often a difficulty in assigning to them a place in the classification which he has drawn up. This is particularly the case in respect of dyspepsia. Although we distinguish many species of dyspepsia by resting their distinctive characters upon the predominance of one or of several morbid phenomena which appear to characterise them, these species often blend into one another, their reputed characteristic symptoms commingling, and alternately assuming the leading place. It is necessary to make this remark; for, hearing me speak of

the different forms of dyspepsia, and seeing them formulated with so much precision by certain authors, you might suppose, that nothing was easier than to distinguish them from each other; and when you found yourselves alone at the bedside of the patient, you would feel yourselves peculiarly at a loss, to be no longer able to recognise what appeared to you so plain and simple in the lecture room. You would experience great embarrassment in deciding upon the appropriate treatment, and in vain would you look out for the indications which you had imagined were always to be met with. Proceeding consequently at hap-hazard, you would fall into serious therapeutic mistakes, mistakes which would lead you to become unbelievers in medicine. On the other hand, if you remember, that there is a possibility of this commingling of the different forms of dyspepsia, you will be enabled, when you meet with it, to adapt your treatment to the actual nature of the case, to watch its manifestations, and combat its individual symptoms by different means, in place of resorting to one uniform mode of treatment. You will have recourse to mixed methods of medication, applicable to the different symptoms which in the aggregate constitute the disease with which you have to deal. It is, Gentlemen, a general rule in medicine, that, except in a few exceptional cases, when a specific disease has to be treated by a remedy which is also specific, we are obliged to attack the different elements of disease by following the indications which they severally present.

Treatment of Dyspepsia.—The most important part of the Treatment is the Regimen.—The best Regimen is that which the patient has learned by experience agrees best with him.—The Specific Character of the Phlegmasia must be taken into account.—Connection of Dyspepsia with the Herpetic Diathesis.—Remedies which produce a Local Modification of the Gastric Inflammation, such as Emetics, Purgatives, Mercurials, Subnitrate of Bismuth, Precipitated Chalk, Alcalies, Lactic Acid, and Hydrochloric Acid.—In Bulimic Dyspepsia, are given Opium and Belladonna in small doses, Zinc, and Antispasmodics.—In Acid Dyspepsia, both Acids and Alcalies available, as they do not act as Chemical Remedies: Narcotics, Mineral Waters.—In Flatulent Dyspepsia, use of Alcalies: Bitters, Quassia, &c.: Tonics, Cinchona, &c.: Aromatics: Mineral Waters, containing Chlorides of Soda: Hydrotherapy: Sea-bathing.—In Dyspepsia con-

nected with Diseased Liver, use of Alcalies, Alcaline Mineral Waters: sometimes, Acids.—Acids particularly indicated in Dyspepsia associated with a Chronic Morbid Diathesis, particularly in fully declared Phthisis.—In Dyspepsia connected with Marsh Cachexia, Alcaline Mineral Waters, and other weak Mineral Waters are of great use.—Dyspepsia connected with Affections of the Uterus is beneficially treated by the Local Treatment suitable to such affections, and also by General Treatment, particularly by Sea-bathing and Hydrotherapy.—In Dyspepsia resulting from Habitual Constipation, advantage derived from Belladonna, certain Purgatives, Mineral Waters containing Sulphate of Magnesia and other Sulphates.—In certain severe cases of Dyspepsia, the Inhalation of Oxygen Gas is resorted to.

Having made these preliminary remarks, I am now in a position to enter upon the question, so difficult and so complicated—the *treatment of dyspepsia*.

From what I have said to you, you will perceive, that it is impossible to formulate precise rules; and that I must confine myself to mentioning a series of measures, applicable only to a limited number of cases, in which the disease has well defined characters, and useless in the majority of cases, unless combined with other remedies selected according to the special indications.

When dyspepsia is associated with well marked chronic gastritis, its treatment is subordinate to the treatment of that affection, and consequently consists in the use of remedies for inflammation of the stomach. In this, as in every form of dyspepsia, regimen constitutes the most important part of the treatment. The first requisite is to reduce the quantity of food taken, so as to render it proportionate to the aptitude of the stomach: this does not imply the necessity of putting the patient on low diet. The selection of the particular kind of food which ought to be prescribed is found, by the majority of physicians, to be a great difficulty. We doctors have all a strange manner of advising our patients on the subject of diet. If we ourselves are fond of tea or coffee, we are indulgent to those who use them habitually or even immoderately. If we prefer this or that kind of wine, if, for example, we prefer Bordeaux to Burgundy, we prescribe Bordeaux to the exclusion of the latter: if we have a fancy for strong meat—beef, mutton, or game—we prescribe strong meat for patients with bad digestion: if we order our patients to eat the flesh of young animals—veal or chicken—or if we advise them to take

fish, it is because we ourselves like to eat this kind of food. In fact, it is not unusual for all the clients of a physician to be placed by the physician on the same diet as he himself adopts.

The law by which we ought to be guided in regulating the regimen of a patient is to recommend the food which the patient has found to agree best with him. This is the only really good and reliable rule to follow. The physician, therefore, ought at once to inquire into this matter. Should a person tell you that milk acts on him like a purgative, you will avoid ordering him to take milk, although it is perfectly well digested by you as by most other persons—you will avoid ordering an article of food which might induce vomiting, diarrhœa, and absolute indigestion. Nevertheless, how many physicians, without considering individual peculiarities, invariably order milk diet in chronic affections of the stomach! Therefore, interrogate your patients carefully, so as to ascertain exactly their dietetic aptitudes, and find out even their *fancies*, if you will allow me to use the expression, which vary with the person's state of health, and still more, perhaps, with the state of his disease. A man who has been suffering for some time from dyspepsia has a wonderfully correct knowledge of the aliments which will best agree with him: find out what they are, and recommend him to use them, even though they should seem preposterously unsuitable, and though personally you should have an antipathy to them.

I must add, however, that there are certain ordinary rules, which ought not to be neglected. Taking into account individual peculiarities, it may be stated, as a proposition which generally holds good, that light soups (made with or without animal food), poultry, fish, and non-farinaceous vegetables suit cases in which there is chronic inflammation of the stomach. Such is the regimen which ought to be prescribed by you in this class of cases, provided the articles which compose it have not already been found improper by the individual's own experience.

The same remarks which I have made on food are equally applicable to drink. Always making due allowance for individual idiosynerasies, the general rule is to allow only a very small quantity of fluid to be taken, and to recommend fermented drinks, wine, or sometimes beer, diluted with water.

Regularity in the hours of meals is a point of no inconsiderable importance. Here, let me mention a matter of detail. It not unfrequently happens that dyspepsia, and the chronic irritation of the

stomach on which it depends, arise solely from imperfect mastication, caused by loss of teeth, or by the patient swallowing his unchewed food. In such cases, to indicate the cause of the malady, is also to indicate the means of cure.

The question of regimen, I repeat, takes the most important place in the treatment of dyspepsia. Under a well appointed regimen, without the use of any other means, the symptoms will disappear in a great many cases. The reason is obvious: a daily succession of fits of indigestion will be avoided, which would have been produced by unsuitable food, and by which the disease would have been kept up, just as a pulmonary catarrh will remain uncured so long as the patient is subjected to the evil influences by which it was originally occasioned.

Generally, however, dyspepsia is not cured by a return to regular habits and a judicious system of alimentation. The gastric symptoms continue with inveterate obstinacy, dependent upon the deep seated character of the chronic inflammation, which is characteristic of chronic inflammation of all organs. The obstinacy of the disease may also, to a certain extent, be due to the inflammation having the stamp of a special diathesis.

This remark renders it incumbent upon me to revert for a moment to what I explained to you in one of my previous lectures. When speaking of the sudoral exanthemata[1] I recalled to your recollection the fact that diathesic manifestations may declare themselves in internal organs, as well as in parts accessible to direct examination. Taking the herpetic diathesis as an example, I stated that the mucous membranes were very often the seat of its manifestations: and, with a view to show the transition of herpetic affections from the external to the internal integument, I asked, if we did not every day see individuals under the influence of this diathesis, take consecutively eczema of the face, occupying the upper lip or the external orifice of the nares, and very obstinate chronic coryza? In another individual a granular sore throat will supervene: in a third there will be deafness, occasioned by the extension of the irritation from the nasal fossæ and pharynx, to the mucous lining of the Eustachian tube. In women, certain uterine affections, certain leucorrhœal discharges are simply the result of an extension to the internal genital organs of a herpetic affection of the external parts.

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[1] See page 297 of the Second Volume of this translation.

In these cases, in which we have as it were the opportunity of following the affection step by step, as it progressively advances from without inwards, no one will deny the nature of the affection, be it coryza, sore throat, or uterine inflammation; but some physicians still refuse to admit, that these affections of the mucous membranes may be the sole manifestations of the diathesis, that they may have supervened consecutively upon the spontaneous or artificial disappearance of similar affections which had for a long time previously occupied a more or less considerable extent of the skin. Nevertheless, Gentlemen, clinical experience demonstrates beyond the possibility of doubt that such metastases, such repercussions, to use the old phraseology, do occur. Experience tells us, that herpetic affections may not only invade the mucous membranes of the nose, larynx, and uterus, which are continuous with the external integument, and within range of visual observation, but that they may also invade more deeply seated organs. How frequently do attacks of bronchitis and diarrhœa, and, to return to our immediate subject, how often does dyspepsia depend upon a herpetic affection of the bronchial, intestinal, or gastric mucous membrane! The occurrence of such cases did not escape the observation of our predecessors; and it would not be difficult to collect from their writings a goodly number of cases similar to that described by Schmidtmann, of cardialgic dyspepsia alternating with eczema of the face, so that, when the eruption disappeared from the face, the patient experienced gastric symptoms, which did not subside till there was a re-establishment of the cutaneous disease. Your teachers, my honourable colleagues of the Hôpital Saint-Louis, entrusted with the wards specially reserved for diseases of the skin, have taught you this fact, which I have now pointed out to you as resting upon my own personal observation. Few weeks, indeed few days pass, in which I am not consulted by patients affected with dyspepsia, evidently dependent upon a herpetic diathesis. This diathesis imparts to the visceral affections which it produces, that characteristic obstinacy which belongs to it, just as it similarly impresses with the stamp of obstinacy every affection, acute or chronic, occurring in persons under its dominion. This specific character of the gastric affection ought therefore to occupy a leading place, when we come to consider the question of the treatment of dyspepsia. But, leaving out of consideration for the present this specific element of the chronic inflammation, let us inquire, how we are to modify the inflammation,

independently of diathesis. Here, it must be admitted, that our available means are limited. In fact, we can do little more than remove causes, which is not always in itself sufficient, or resort to the employment of certain modifying topical agencies. When the affected parts are situated upon the exterior of the body, so as to enable us to apply directly our remedies, intervention is more easy, and is likewise more efficacious. In chronic ophthalmia, for example, it is easy to apply to the eye, different liquid collyria or powders—solutions of sulphate of copper, zinc, or nitrate of silver, or, in the form of powder, calomel, or oxide of zinc.' If the inflammation be situated principally in the eyelids, we may use greasy applications: the pomade of Régent, into the composition of which enter the red oxide of mercury, crystallized acetate of lead, and camphor; the pomade of Desault (de Lyon), and many other unctuous applications of a like nature. In chronic inflammation of the nasal mucous membrane, in ozæna, we may cause the patients to snuff up mercurial powders, and inject caustic solutions, which are also peculiarly suitable in pharyngeal sore throat, and in vaginal and uterine inflammations. In a word, we may attack directly these inflammations, by modifying agents with which we are acquainted, and the action of which may be assisted by the use of remedies directed to the diathesis, or rather to the general state of the system upon which the local affections depend.

We act with much less certainty by means of topical agents, in inflammatory affections of the stomach. However, when dyspepsia is dependent upon a chronic inflammation, which has retained to a certain extent its acute character, topical modifying agents, substitutive remedies, are indicated. Among them, emetics hold the first place. Their part does not consist in freeing the stomach from the saburral matter or bile, which load it; for after the ingestion of aliment a part of this saburral matter or bile is evacuated; however, the mucous membrane thus cleansed, if one may use such an expression, remains inflamed as much as ever, and continues more or less to produce morbid secretions. To seek merely to evacuate these secretions, would be as useless as to sweep away the morbid secretions which cover the skin affected by eczema. Here the abnormal secretions do not continue the less, and are scarcely removed from the surfaces which they pollute, when they are reproduced. The same thing happens in respect of morbid secretions of the stomach. Though, in a case of poisoning, the action of an emetic

is mechanical, by causing violent expulsion of the deleterious agent which has been ingested, its operation is of a totally different nature in dyspepsia. In dyspepsia, emetics act as substitutive agencies, as modifying powers, as I shall now endeavour to explain.

Tartar emetic, for example, when brought into contact with a mucous membrane, acts in the same way as upon the skin, that is, by determining violent inflammation; but this inflammation, subordinate to the quantity of the agent by which it is excited, undergoes spontaneous cure; and this occurs more quickly when the tartar emetic has been given in suitably graduated doses. The inflammation, therefore, is transient, and that is the characteristic of every inflammation excited to produce a therapeutic result. We may say the same of sulphate of copper, a topical irritant, quite as irritating to the gastric mucous membrane as to the mucous membranes of the eye or nose. When, therefore, we administer an emetic—tartar emetic or ipecacuan, polygala or veratrum album, sulphate of copper, or sulphate of zinc—we substitute for the pre-existing gastric inflammation, another kind of inflammation transient in its character, and which will cease spontaneously. We act absolutely in the same manner as when we employ irritant collyria, to combat inflammation of the ocular mucous membrane—in the same manner as when we treat by caustic injections the catarrhal affection of the urethra, called blennorrhagia. Exactly in the same way emetics act beneficially, in the treatment of dyspepsia. It is also by modifying the gastric inflammation, and not by causing evacuation by stool of the saburral matter, the bile, and the morbid secretions of the stomach, that calomel, grey powder, blue pill, and other mercurials prove useful in numerous cases.

These modifying remedies however—emetics or purgatives—must be cautiously administered, for we cannot with impunity induce frequent vomiting in a dyspeptic subject. We might run the risk of going beyond the limits proposed; and the therapeutic action of the remedies being exceeded, we might see, in place of the chronic inflammation which we wished to supersede, a very violent inflammation, not at all of a transient nature, and calculated to induce serious symptoms.

In employing these remedies, having first of all found that they are indicated, it will be necessary to substitute other modifying agents, which, whilst they must be less energetic and less rapid in their effects, will at the same time not be less active. Such remedies are

the subnitrate of bismuth and precipitated chalk. Employed daily as topical means, in certain cutaneous affections (as in the chafing of the skin of infants) these remedies are useful: their efficacy is likewise incontestable in certain chronic inflammations of the large intestine. My friend Dr. Lasègue has made known the beneficial results which he obtained in such cases, both in adults and in children, by the employment of injections, containing subnitrate of bismuth and chalk. Their utility is not less in the dyspepsia of chronic gastritis. They ought to be given in large doses: from five to ten grammes of the chalk may be administered in the course of the twenty-four hours mixed with an equal quantity of subnitrate of bismuth, and divided into packets containing from two to four grammes. These powders ought to be taken (as a general rule) before meals.

The secretions of the stomach resume their normal character, on the cessation of the inflammation of the gastric mucous membrane. It is necessary, however, in some cases, to give special aid to the secretory functions, which have got into a state of greater or less disorder. Certain acids, such, for example, as lactic and acetic, or better still hydrochloric acid, which you have often seen me prescribe, are excellent remedies in the dyspepsia of chronic gastritis. At the same time—and the fact is remarkable—while some persons are benefited by acids, others derive no good from them: to such it is necessary to administer alcalies. It is difficult to determine which class of remedies will prove most suitable; and it is also difficult, to state the manner in which acids and alcalies act. The chemical explanations which have been given are open to great objection, particularly as we see acids and alcalies produce equally beneficial effects in different individuals, whose cases are, apparently, exactly similar. Without stopping to consider the interpretation which chemists have given, of the manner in which these medicines operate, let us for the present be satisfied with the knowledge we derive from clinical experience. We know that in chronic affections of the stomach, when the patient, after having been subjected to the previous treatment of which we have just been speaking, retains difficulty of digestion, sometimes alcaline mineral waters, and sometimes, though not so frequently, acid mineral waters, are administered with success. When I come to speak of acid dyspepsia, I shall return to this point: I shall then discuss the probable manner in which acids and alcalies act. For the present, let it suffice to call your attention to this subject, reserving for a future occasion the

remarks which I have to make upon the circumstances which seem specially to indicate one or other class of remedies.

Gentlemen, in pointing out the different forms which dyspepsia may assume, I have told you that there is one form of the affection accompanied by bulimia, or to speak with more precision, by a feeling of emptiness of the stomach soon after eating. I told you, that in this form of dyspepsia, the disorder of the digestive functions was characterised by diarrhœa, supervening almost immediately after eating. Patients who are thus affected will tell you that they digest very rapidly—that their food is not heavy on the stomach—that their stomach is in excellent order—and that the disorder is only in the intestines. I have told you the way in which I explain the cause of the symptoms in cases of this description: and I shall enter more into details when I come to treat in a special manner of diarrhœa. This, however, is the suitable occasion to state the means at our disposal for the treatment of these cases.

I begin by speaking of opium. This medicine, although sometimes deplorably misapplied in the treatment of diseases of the digestive organs, is, in the class of cases now before us, more useful than any other remedy. To derive from it, however, all the benefit it is capable of imparting, it requires to be given with the greatest circumspection. It is impossible for me to tell you the exact doses in which it ought to be administered. In each particular case, the physician must decide this question by considering the tolerance of the individual for opium. There exists great diversity in this respect, not merely in the differences of tolerance in individuals, but also in the difference between the degree of tolerance which the same person has at different times, according to the varying circumstances in which he may happen to be placed. Some persons can bear enormous quantities of opium; and I mentioned remarkable examples of this peculiarity when lecturing upon epileptiform neuralgia. Others are affected by a single drop of laudanum: this statement is applicable to adults; but young children are sometimes narcotised by even one fourth of that quantity. Nothing is so difficult as to judiciously manage opium. On this fact I cannot lay too much stress: for no remedy is dispensed so improperly, so prodigally, and with so little inquiry into the idiosyncrasy of the patient. Note well, Gentlemen, that this observation has a general bearing, and does not only apply to what is done in the treatment of dyspepsia. During my clinical lectures, I shall have frequent opportunities of raising my

voice against this abuse. In the malady before us to-day—bulimic dyspepsia with constant diarrhœa—opium is, however, a wonderful remedy, provided it be administered in moderate doses. The laudanum of Sydenham is the most convenient preparation to employ, for its doses are the most easily apportioned. It is prescribed at first in doses of *a single drop*, the dose being augmented if necessary. The patient ought to take it before, and not after, eating. To obtain a successful result from the remedy, this precaution is indispensably necessary. The small quantity of opium received into the stomach before digestion has commenced is sufficient to keep duly quiet and regular its muscular excitability, the inordinate extent of which causes the symptoms you have to combat; this, too, it accomplishes without suspending organic sensibility. Opium, on the contrary, administered in large doses, producing effects beyond those intended, causing slumber both of the muscular excitability and organic sensibility, arresting at once the muscular movements and the secretion of the gastric juice, increases in place of calming the disturbed state of the digestive function, to the performance of which regular muscular movements and secretion of gastric juice are indispensable.

Belladonna is undoubtedly useful in this form of dyspepsia, though its beneficial action is less decidedly beneficial than that of opium. Perhaps you are surprised to hear me praise this medicine in these cases, as its usual effect is the very opposite of that which we wish to obtain in them. You are aware that belladonna, in common with all the poisonous *solaneæ* produces relaxation of the bowels, while opium causes constipation. So decidedly is this property characteristic of belladonna, that the physician avoids administering it to patients affected with diarrhœa. But while there is a reason for not prescribing it in cases of diarrhœa in which the cause of the flux exists in the intestine itself, it would be wrong not to employ it in the cases to which I am now directing your attention. I have no hesitation in stating in the most positive manner, that cases of this class occur in which belladonna renders services very nearly equal to those derived from opium itself. Here, a word of explanation is necessary. Experience tells us that the poisonous *solaneæ* are very often our most powerful means of conquering constipation. You all know the effects of tobacco: to some individuals, a cigar is the best laxative; and there are persons whose only security for a daily stool is a daily cigar. There are others upon whom tobacco produces no laxative

action, but upon whom this is produced by a pill containing a grain or half a grain of the extract of henbane. These substances perhaps owe this singular property to the poisonous principle which is the active base of all the *solaneæ*. Belladonna, the utility of which in some cases of constipation is so well known, particularly since the researches of Bretonneau, acts in virtue of this principle. Here the same remark applies which I made in respect of opium: it can only be administered in very small doses. A centigramme [the seventh part of an English grain] is generally sufficient; though one is sometimes obliged to give a somewhat larger dose, say, for example, a centigramme and a quarter, or two centigrammes and a half, but there is rarely any necessity for exceeding these quantities. It might appear, that what I have just said contradicts my former statement regarding the administration of belladonna as a means of arresting diarrhœa; but this contradiction is only apparent, for, if the diarrhœa depends upon an increased excitability of the stomach, the belladonna will calm the excitability and suspend the diarrhœa, by moderating the abnormal condition upon which it depended.

Though the poisonous *solaneæ*, particularly belladonna, may be of great service in these cases, we must not forget that their abuse, particularly the abuse of tobacco by smokers, is a cause of dyspepsia. This is an important fact. The nicotine absorbed by smokers in greater or less quantity diminishes the physiological excitability of the stomach. In such circumstances, patients experience almost always a sensation of weight in the epigastric region; stomachic digestion proceeds exceedingly slowly, and it is in vain that we have recourse to treatment calculated to rouse the inactive stomach, unless we get the patients to discontinue, or at least to moderate, the injurious habit of smoking.

It is important, therefore, in prescribing belladonna, or any other remedy derived from the *solaneæ*, not to exceed certain limits, otherwise a sort of paralysis might be induced, which would have to be treated by aromatic or alcoholic stimulants, or, better still, by the preparations of nux vomica. It is consequently necessary, as I have just said, to begin with small doses, increasing them if necessary.

In the same category as the *solaneæ*, certain antispasmodic remedies, such as valerian, assafœtida, and oxide of zinc are indicated. All of these remedies ought to be given in very small doses, and always at the beginning of meals.

Gentlemen, acid dyspepsia—often associated with flatulent dyspepsia—is a more common affection than that which I have just been discussing. The physician frequently makes serious mistakes in the acid form of the disease, in which sour eructations and copious secretion of gas occur during digestion. We physicians have the misfortune to be very bad chemists. I am not doing an act of injustice to any one, when I say, that of the 300 now present 299—myself included—deserve this reproach. Nevertheless, with an amount of assurance proportionate to our ignorance, we do not hesitate to apply to therapeutics the little knowledge of chemical theories which we possess. Laboratory experiments having taught us that acids neutralise alcalies, we lay hold of the fact: taking it as starting point, the treatment of certain cases of dyspepsia seems simplicity itself. The stomach contains a large quantity of acid, which, say we, must be neutralised: we can obtain this result by administering magnesia, bicarbonate of soda, lime-water, or chalk. Notwithstanding our reasoning, the evil increases, the acid secretion becoming more abundant in place of diminishing. We nevertheless still cling to our original opinion: in the increased severity of the symptoms, we only see an additional reason for insisting more strenuously than ever upon our treatment. We immediately double or triple the doses of the alcali, when we find that we have obtained no beneficial results from the doses first prescribed. Soon afterwards, very probably, the patient is seized with diarrhœa: in place of any benefit having resulted from our treatment, matters have become worse. Being thus baffled in our curative efforts, we are obliged to impute to the obstinacy of the disease consequences entirely due to our untoward interference.

In such cases, as well as in many others, a certain amount of physiological knowledge will suffice to prevent our falling into the errors towards which chemical theorising tends. Physiology teaches us that the gastric juice is naturally acid—that this acidity is its constant condition both in man and the lower animals, irrespective of species, sex, age, or food—that it is due to the presence of phosphoric, hydrochloric, and lactic acids, but particularly the latter, which alone is found in a free state. These acids are secreted in greatest abundance during digestion; and their secretion is indispensably requisite to the due performance of the functions of the stomach. When digestion is not going on, the gastric secretion is less abundant, and feebly acid; or sometimes, it is neutral or even

alcaline. As I have already mentioned, the normal secretion of gastric juice is sometimes partially suspended: but there are other cases in which it is secreted in too great quantity, and this is the point which I have in view. Irritation of the mucous membrane of the stomach, provided it neither proceed to the extent of inflammation, nor too far, causes increased secretion: excessive irritation or inflammation arrests the secretion. This has been exclusively established by the experiments of Beaumont on his Canadian,[1] and by the often repeated experiments of Claude Bernard.[2] Mental emotion and protracted occupation at the desk occasion increased secretion; and are, as you know, very common causes of indigestion accompanied by eructations and vomiting.

In cases of this description, you cannot counteract the acidity by bicarbonate of soda, nor indeed by any other alcalies acting as chemical agents. Farther—and from the practical position upon which I take my stand, the fact is of paramount importance—the experiments of Claude Bernard upon animals prove that the secretion of gastric juice, and consequently the acid fluids of the stomach, increase when bicarbonate of soda, magnesia, or other alcalies are administered; while the secretion is delayed or diminished by giving acids. These positive facts entirely set aside the trivialities of chemical theory, which are of no use as guides in the treatment of disease, and can still less lay down therapeutic laws to us, as some consider ought to be the case. When chemists tell us that alcalies are useful in a considerable number of cases of acid dyspepsia, they only repeat what we had previously learned from clinical experience. But when they state that the benefit is produced by the alcalies neutralising the acids, we reply that no neutralisation has taken place, or if there has, it has been only to a very limited extent. On the other hand, we maintain that these remedies act as powerful modifiers, which not only place their stamp upon the organ, but also impart a peculiar modality to the whole economy, in virtue of which the functions are regulated, and the abnormal acidity of the secretions is corrected.

Let me give another illustration of my view of this matter; and

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[1] Beaumont:—Experiments and Observations on the Gastric Juice and the Physiology of Digestion. Plattsburgh: 1833.

[2] Bernard (Claude):—Cours de Médecine du Collège de France: Liquides de l'Organisme. Paris: 1859.

one which, I think, will enable you better to understand it. A person affected with gravel, who has passed some gravel during or soon after his treatment, will remain for six months, eight months, or a year without passing any, when under the influence of a season passed at Pougues or Contrexéville using the waters. Now, will any one say, that these feebly alcaline waters have maintained an alcaline action during all that time? Certainly not. The proper answer is, that these waters, by restoring the economy to a healthful condition, or (if we wish more to localise the effect), by modifying the urinary apparatus in a salutary manner, have restored the kidneys to the natural performance of their secretory function, and have so prevented uric acid from being formed in excess. If they have exerted any chemical influence upon the products of excretion, it has been very transient. In fact they have an action—a vital action—which is much more powerful than any chemical action, and which, when once set in motion, continues for a much longer period.

The same is seen in dyspepsia. If the waters of Vichy, of Pougues, or of Vals have no other action than that which takes place in virtue of the chemical reaction caused by the alcalies which they contain, to be logical, it would be necessary to insist upon the patients continuously using these waters to maintain their supposed neutralising effect. Their beneficial operation is no more chemical in dyspepsia than in gravel: it depends upon their impressing on the economy a certain modality, in virtue of which the gastric secretions are so regulated as not to contain more than a normal quantity of acids.

The remarks now made in relation to the action of alcalies in gravel and dyspepsia, are applicable to many other articles of our materia medica. Therapeutical action does not admit of chemical explanation: it is essentially *vital*, or if you prefer the expression, essentially *physiological*.

A healthy woman, for example, takes iron in large doses. Menstruation is disturbed, and the catamenia are suppressed, in a great many such cases. What has taken place? The iron, given inopportunely, has deteriorated the health of the individual, the result of which deterioration has been suppression of the menses. But supposing that we give to a chlorotic woman the same remedy in even larger doses, the result will be entirely different—menstruation, which was before imperfectly performed, will become normal.

Chemists will have no difficulty in explaining the last fact; but I should like you to tell me, how they can explain the first.

If other proofs were wanting to support this medical view of therapeutic action, or (to return more directly to our subject), to explain the action of alcalies in dyspepsia, we should find the required evidence in the fact, that in many, perhaps in most cases, we easily cure dyspepsia connected with an excess of acid secretion, by the employment of other means which I am now going to mention, and which can hardly be explained by any chemical hypothesis.

Graves stated that abnormal gastric secretion was powerfully and favorably modified by medicines acting specially on the nervous system. At the head of this class of remedies he placed *opium*, given in very small doses. He, it is true, combined it with the subnitrate of bismuth. The particular medication from which he derived marvellous effects, consisted in administering a mixture of two milligrammes and a half [$2\frac{1}{2}$ seventieths of a grain] of sulphate of morphia, or five milligrammes [5 seventieths of a grain] of thebaic extract with from fifty to seventy-five centigrammes [$7\frac{3}{4}$ to 12 grains] of subnitrate of bismuth and an equal quantity of magnesia. This is administered twice or thrice daily a short time before meals.

The choice of mineral waters in the treatment of acid dyspepsia is regulated by the causes which produce the disorders of digestion, a fact which supports the thesis I sustain, to the effect that chemical explanations of therapeutic action are worthless. The indications for the use of this, or the other mineral water, do not depend upon the acidity, more or less decided of the stomachic secretion, but upon the general state of the economy, with which the perverted gastric function is associated. Thus, when acid dyspepsia is associated with chlorosis, ferruginous mineral waters ought to be prescribed in preference to all others. Of this class, are the waters of Spa in Belgium, of Schwalbach in the Duchy of Nassau, and of Pougues, Bussang, Forges, Passy, and others in France.

Dyspepsia in hysterical women, in hypochondriacal men, in all very nervous persons, in great eaters, and in old people, is chiefly *flatulent;* that is to say, characterised by the formation of a large quantity of gas, and accompanied sometimes by acid eructations supervening immediately after meals. In this form of dyspepsia, alcaline preparations are also of some use, if given only for a few

consecutive days, and immediately followed by the administration of bitters.

Thus, for five or six days, the patient ought to take at the beginning of his two principal meals, and on going to bed at night, a powder composed of magnesia, chalk, bicarbonate of soda—from thirty to forty centigrammes [4½ to 6 grains] of each. These powders ought to be mixed immediately before they are taken in about a fourth part of a tumbler of water.

This treatment is to be followed up by the employment of bitters, among which I think quassia ought to occupy the chief place. In the morning fasting and at mid-day, at an equal interval between the two principal meals, the patient ought to drink a cup of the infusion of this bitter wood, prepared by leaving a teacupful of cold water for fifteen or twenty minutes, in a goblet made of quassia; or (which is still better) by macerating two grammes of quassia shavings in cold water, for from four to six hours. I have seen this form of dyspepsia yield much more rapidly to this simple treatment, than to the long continued use of alcalies. In these cases, wine of cinchona is also indicated. It ought to be given either immediately after meals, or immediately after the patient has taken a small quantity of food. By proceeding upon this plan, we prevent pain in the stomach, which is apt to be excited when wine of cinchona is taken fasting.

In flatulent dyspepsia, also, decided advantage is obtained, by the use of certain *liqueurs* administered after meals. Those which I prefer are *anisette fine de Hollande*, and the yellow liqueur of the Grande-Chartreuse, which is simply an alcoholic tincture of various aromatic plants. I need hardly add, that these liqueurs must be taken in very small quantities. Other aromatic preparations may be substituted for them. For example, we may give the infusion of illicium anisatum (or star anise), one of the ingredients of the *anisette de Hollande*, or we may give an infusion of a mixture of star anise, common anise, ginger, and cascarilla bark. These substances, when reduced to coarse powder, are weighed out in packets containing fifty centigrammes of each ingredient. Their infusion is taken immediately after meals.

Mineral waters are of undoubted utility in these dyspeptic affections: but we must not send the patients to Vichy, Carlsbad, or Pougues; for the waters of these places are contra-indicated. We must recommend them to go to Niederbronn or Forbach, where the predominating mineral ingredients are the same as those of sea-water.

We may also recommend Nauheim, Soden, and Kissengen, which also contain chloride of sodium. The waters of Homburg are likewise in the same category; but unfortunately, the too celebrated gaming tables of the town damage the reputation of the springs.

Without leaving Germany, we may mention the water of Selters, in the Duchy of Nassau, better known in France by the name of *eau de Seltz*. Each litre of this water contains about two grammes of chloride of sodium, one gramme of carbonate of soda, nearly half a gramme of carbonate of lime, and carbonate of magnesia, a small quantity of sulphate of soda, a minute proportion of carbonate of iron, and an indeterminate quantity of carbonic acid. Its temperature varies between 15° and 20° C. Its agreeable taste has so vulgarised its use, that it is served at the tables of the inns and eating houses as commonly as artificial *eau de Seltz* is similarly made use of in Paris. I may remark in passing, that artificial does not in any respect resemble the natural *eau de Seltz*.

Some French mineral waters, such as those of Plombières in the Vosges, and of Bagnères-de-Bigorre in the Hautes-Pyrénées, though containing only a minute quantity of mineral ingredients, are also very useful in flatulent dyspepsia.

Hydrotherapy is a method of treatment in this kind of dyspepsia which is not less efficacious than those I have now reviewed. Its use in other forms of dyspepsia is not great. Let it be understood that the hydrotherapic treatment which I now speak of is hydrotherapy methodically applied, and carried out in a regular manner.

Sea-bathing, I place in the same category as hydrotherapy. The patient ought to remain a very short time in the water, if he bathe on the coasts of the Manche, or on our northern ocean-coasts. On the sea-shores of the south-west of France—in the Mediterranean—the duration of the bath may be longer, as the climate is warmer. In these regions, in addition to bathing in the sea, the patients may use baths of sand naturally heated by the sun. Patients ought to remain in these baths of sand for from fifteen minutes to an hour—in fact till a decided reaction has been established in the skin.

Unfortunately, sea-bathing, travelling to mineral springs, and hydrotherapy in a hydrotherapic establishment are means of treatment which are not accessible to all. Business necessities and expense—matters which we must always take into account—often place these remedial measures beyond the reach of our patients. In such cases, the hydrotherapic treatment may be pursued according to a plan which

I am now going to describe; and which though no doubt less efficacious than the methodical system of a hydrotherapic establishment under medical direction, is nevertheless really beneficial. Home-hydrotherapy consists in enveloping oneself on getting out of bed in the morning in a wet sheet slightly wrung out of cold water. After remaining for one or two minutes wrapped up in the wet sheet, you rub yourself or get yourself rubbed with it, you are then rubbed with linen which is quite dry, but not warmed; after this, you dress, and as soon as possible start on a walk which you continue for three quarters of an hour. The hydrotherapic operation may be repeated at night before going to bed. Great advantage may also be derived from immersions (not exceeding three minutes' duration) in cold salt-water. Hydrotherapy pursued after this fashion will suffice in many cases so to modify the action of the whole economy, as to cure the gastric disturbance and restore to the stomach its lost tonicity.

Gentlemen, I have hitherto spoken of forms of dyspepsia having their causes primarily and directly in the stomach. Before completing what I have to say to you on the subject of dyspepsia, I must speak of the treatment of those cases of dyspepsia which are to a certain extent independent of the gastric apparatus—independent in this sense, that the apparatus is only indirectly involved, that the disorders of which it is the seat are the result of sympathy between affections of the stomach and different parts of the digestive tube; and likewise between the digestive and other organs of the economy. The forms of dyspepsia of which I am now going to speak are those which so frequently accompany chronic affections of the liver and uterus, diathesic diseases such as scrofula and tubercle (particularly pulmonary tuberculisation), and marsh and other cachexiæ. I must go over this ground rapidly, otherwise, as you can easily understand, I should run the risk of exceeding my limits, and ranging too widely over the domains of pathology; for there are few maladies in which dyspeptic symptoms do not play a more or less conspicuous part. I shall, therefore, make no attempt to exhaust the subject: on the contrary, I shall limit myself to giving you some practical indications, having specially in view the cases which we have observed together.

In respect of diseases of the liver, of which we have had a certain number of cases under observation, let me say, that in the dyspeptic symptoms which arise in connection with them, alcaline mineral waters are marvellously efficacious. Among them, such waters as

those of Carlsbad, Vichy, and Vals, which no doubt owe much of their usefulness to the bicarbonate of soda, their predominating mineral ingredient, are very preferable to the waters of Pougues and the like, in which the bicarbonates of lime and magnesia predominate.

However, whilst I proclaim the efficacy of the alcaline waters, there are cases in which I prescribe acids. You have seen me order acids to be taken by many patients who were unable to digest their food unless they took a small quantity of hydrochloric acid after each meal.

The equality of success which attends the use of alcalies in some, and of acids in other patients, might seem to imply a contradiction; but this is a notion against which I must guard you. The contradiction is only apparent: it is in fact an additional confirmation of the remarks I have just been making as to the worthlessness of chemical explanations of vital phenomena, which belong to the domains of physiology and clinical medicine.

We must bear in mind the fact derived from clinical observation that both alcalies and acids have a general action, not only on the whole intestinal canal, but also, and still more, upon the entire economy. So much is this the case, that it is not a matter of indifference which particular acid or alcali we select. Mineral waters which derive their alcaline properties from bicarbonate of lime or from magnesia, are, as I have already pointed out, much less efficacious than waters containing bicarbonate of soda, in the dyspepsia now under consideration.

The case of one of our patients in St. Bernard's ward afforded a remarkable example of the difficulty which occasionally exists in instituting a regular plan of treatment, and of the necessity which sometimes arises of combining the use of means apparently the most diverse. The patient to whom I refer was a young woman who occupied bed No. 9. She came into hospital on account of severe colitis, characterised by glairy, sanguinolent stools. She was between the fourth and fifth month of pregnancy; and her malady brought on abortion. "If," said Hippocrates, "a pregnant woman is attacked with profuse abdominal flux, there is reason to fear that she will abort." I detected great hypertrophy of the liver with effusion into the peritoneum. For a long time, the patient remained in a condition of considerable danger: nevertheless, convalescence was established, although the liver continued greatly hypertrophied

and very painful on pressure, and although digestion was still very badly performed. I tried alcaline remedies, without any good result: the symptoms continued, and there was a speedy return of the diarrhœa. It then occurred to me to try hydrochloric acid. The patient began by taking, after each meal, one drop in a quarter of a tumbler of sugared water: this was found to promote digestion. I then increased the quantity of the acid: first, the increase was to three drops daily, one drop being taken after the morning, and two after the evening repast: subsequently, two drops were taken after each of these meals. From that time, there was a complete cessation of the feeling of weight in the stomach, and of the sensation of fulness after eating: and it is a remarkable fact, that along with this improvement in the digestion, the bulk of the liver diminished: there was nevertheless increased diarrhœa. Under the circumstances, I deemed it advisable to suspend the use of the acid, and give in place of it prepared chalk, which I have always found useful in intestinal flux. The result was arrest of the diarrhœa, and reappearance of the dyspepsia. I then again suspended the alcali, and reverted to the use of the acid mixture, whereupon the dyspepsia again yielded, and the diarrhœa returned. I was greatly perplexed how to act: and at last resolved to combine the use of both medicines, prescribing the chalk at the beginning and the acid at the conclusion of the meal. This combination proved successful: the patient was relieved from all her morbid symptoms.

This history possesses great practical interest: it shows the physician that, in respect of such cases, he in reality knows next to nothing, or absolutely nothing. We search for explanations, and for so doing we cannot be blamed, as in no other way can we systematise our knowledge, and establish for our guidance certain laws, which no doubt may be more or less defective, but which nevertheless prevent us from acting as mere empirics. Unfortunately, our explanations are generally incorrect.

Here, you see is a case of dyspepsia associated with severe disease of the liver in which there could be no doubt as to the utility of acids. They are also useful in numerous cases of dyspepsia connected with chronic maladies.

How was I led to adopt this mode of treatment? Long ago I had read in the English medical journals accounts of cases treated and cured by mixtures having hydrochloric acid as their principal ingredient: I knew that Cullen had said:—"All the acids seem to

have the power of stimulating the stomach, and consequently of increasing the appetite: the acids, particularly used with success are vitriolic acid and marine acid [hydrochloric acid], and that acid which is formed by the distillation of vegetables, and that derived from tar-water." I had also observed in different works published in France, particularly in the work of Dr. Caron, that acids were advantageously prescribed in certain disorders of the digestive system. I had never found, however, the special indications of this treatment formulated with sufficient exactness. I consequently was somewhat incredulous, and inclined to believe that the patients had recovered, not through taking hydrochloric acid, but in spite of having done so; but some years later, when one day sitting at dinner, next to one of those indefatigable tourists who seem to personify perpetual motion, I was informed by him, that he (being compelled by his constant peregrinations to adopt a great diversity of regimen, and to take his meals very irregularly) was indebted to hydrochlorie acid for the recovery of his digestive powers lost through the irregularities described. He never travelled without his precious remedy. He always carried with him a little bottle of dilute hydrochlorie acid, of which he took from four to eight drops at the conclusion of each meal. I was very much struck by this statement; and after a long conversation with my tourist, I became quite satisfied that his custom was not the result of a mere fancy, but was a positive necessity. I then set myself to study the English authors: the indications which I gleaned from the works of Cullen and other authors, were not more precise than those gathered from conversation with the traveller. Nevertheless, I tried the treatment upon some private patients: at first, I proceeded timidly, but soon found that in certain cases, not however very distinctively characterised, real benefit was derived from the hydrochlorie acid; I continued my experiments, some of which you have witnessed in the treatment of our hospital cases.

As I have just stated to you, it is in dyspepsia associated with chronic disease, that the benefit derived from this treatment has appeared to me to be especially marked, although it is likewise seen in cases of another description.

When speaking of the treatment of dyspepsia arising from chronic gastritis, I have spoken to you of the utility of hydrochlorie acid, but it has always appeared to me to be more decidedly indicated in cases connected with chronic disease.

In bed 23 of St. Bernard's ward, we had a young woman, affected with obstinate chronic diarrhœa, who had fallen into such a state of anæmia and emaciation that I thought she had tubercular phthisis, although, upon the most attentive examination, I was unable to detect any sign of that condition. In addition to the intestinal flux, the patient had that peculiar form of dyspepsia characterised by the state called great fulness of the stomach. I ordered her to take hydrochloric acid at first in doses of one drop, then in doses of two drops, and afterwards in doses of three drops, at the conclusion of each meal: digestion soon became improved; but it was necessary to continue the treatment for a long time, for whenever it was discontinued, difficulty of digestion immediately returned. It is true, that the diarrhœa did not yield. Some of you, no doubt, will recollect this patient, whose curious case has been, for more than one reason, reported in the work of MM. Gros and Lancereaux.[1] The symptoms with which she was affected, and the nature of which we did not for a long time detect, depended upon constitutional syphilis: they did not disappear till after the patient had been subjected to mercurial treatment.

In the same ward, there was at the same time, a patient suffering from very manifest pulmonary tuberculisation. The progress of the tubercular affection seemed for a time to be arrested; lost flesh was regained, and the general condition became improved. The local signs were also modified: moist crackling had succeeded to slightly prolonged expiration mingled with some disseminated mucous râles: when fresh hemoptysis took place, the moist crackling reappeared; and to these symptoms dyspepsia was added. Four or five hours after eating, the patient experienced a feeling of weight in the stomach. Hydrochloric acid given at meals remarkably aided digestion, which was only properly performed so long as the use of the remedy was continued.

In bed 27 we had a similar case. This woman, who was also the subject of tubercle in a state of softening, was becoming weaker day by day. During the night, she had burning fever followed by profuse sweating. There was hypertrophy of the liver, as is very often the case in phthisis. She suffered from indigestion and diarrhœa. Hydrochloric acid promptly cured the gastric symptoms, but did

[1] Gros et Lancereaux:—Des Affections Nerveuses Syphilitiques. 8vo. Paris: 1861.

not, of course, arrest the progress of the tubercular disease. I could give you histories of a number of similar cases. Indeed, it is chiefly in dyspepsia supervening in phthisis that I have found the acids of great use.

I too have tried to found a little theory of my own upon the results of my experience. I have reasoned thus:—During digestion, the stomach contains a certain quantity of lactic, phosphoric, and hydrochloric acids: does, said I to myself, my medication prove successful because it supplies the gastric juice with a certain amount of acid in which it is deficient? I tried lactic acid in doses larger than those I had given of the hydrochloric acid: I began with ten and went on increasing the dose to twenty drops, but, still finding the dose insufficient, I gave as much as two and even three grammes. The results were very variable: the lactic acid, however, I found did less good than the hydrochloric; so for the future I preferred the hydrochloric.

To sum up these remarks, Gentlemen:—Without giving any account of the action which takes place in the digestive canal under the influence of acid or alcaline remedies, let us always remember that alcalies are not the only therapeutic agents available in the treatment of dyspepsia connected with chronic diseases; that acids are also indicated, but that the indications cannot be formulated in advance with exactitude, and that they can only be discovered by attentive observation in each case.

I have now come to a very important part of my subject—the treatment of dyspepsia coincident with more or less anæmia, and more or less hepatic and splenic engorgement. Such complications observed in persons who have long suffered from marsh fevers, or in persons who, though they may not have suffered from marsh fevers, have lived for a long period in marshy countries and been subjected to their miasmatic influences, must be carefully distinguished from the similar complications which characterise leucocythæmia. This is very important; because leucocythæmia is a disease against which medicine is powerless; whereas under the other conditions described there is generally rapid recovery.

Whether dyspepsia and its accompanying visceral engorgement depend on anæmia or be its cause, I cannot say; but in either case the gastric symptoms, the hypertrophy of the spleen and liver, are very often successfully treated by means which one certainly never would expect to be useful. At the military hospital of Vichy, for in-

stance, which contains a large number of patients suffering from paludal cachexia, characterised by hepatic and splenic engorgement, and dyspeptic symptoms of more or less severity, we see recoveries or at least very rapid ameliorations under the use of the Vichy thermal alcaline water, which is specially efficacious in that class of cases. So general is the fame of the efficacy of the waters of Vichy and Pougues, in affections consecutive upon paludal poisoning, that it is a constant practice of patients to resort thither from the Nivernais, the Berri, the Bourbonnais, and Auvergne for their cure. This is a case in which popular opinion and medical observation entirely agree. The medical practitioners of Vichy unanimously proclaim the virtues of their thermal springs in dyspepsia and other functional and organic disorders depending on paludal cachexia. My lamented colleague Dr. L. de Crozant, late medical inspector at Pougues, published interesting works with a view to make known the usefulness of the waters which he administered with so much science and intelligence.[1] These remarkable properties of the waters of Vichy and Pougues have been long known to, and admitted by, physicians.

I ask you whether there is, at first view, anything more anomalous, more opposed to chemical theory, than to administer to patients whose blood is in so dissolved a state that dropsies and passive hemorrhages are of frequent occurrence, alcalies which are looked upon as peculiarly possessing the properties of blood-solvents? Whether the predominating ingredient be bicarbonate of soda, as in the waters of Vichy, or bicarbonate of lime, as in the waters of Pougues, the waters administered are alcaline, and their good effects emphatically contradict the statement of the chemists in relation to the action of alcalies upon the blood. I know very well, that it is customary at Vichy, to prescribe the Lardy spring to persons suffering from paludal cachexia and that this Lardy spring contains a certain very small proportion of the bicarbonate of the protoxide of iron—about twenty-eight thousandths of a gramme. I also know very well that the waters of Pougues contain bicarbonate of iron nearly in the same proportion as the Lardy spring of Vichy; and that both contain carbonic acid gas, and that their beneficial effects may be attributed to the iron and the carbonic acid gas. However, at Vichy the same class of patients recover by using the Grande-

[1] L. de Crozant:—De l'Emploi des Eaux Minérales de Pougues dans le Traitement de quelques Affections Chroniques de l'Estomac. Paris: 1851.

Grille spring or the Hôpital spring, as completely as, though less rapidly than when they drink from the wells of Lardy; and still less rapidly than patients who go to Pougues. It appears certain, therefore, that the honour of the cure ought to be attributed to the mineral alcali.

I have been desirous to point out these facts to you, that I might put you thoroughly on your guard against chimiatria, which, particularly in its applications to therapeuties, leads to deplorable mistakes. I am not at all afraid of recurring too often to this topic, so strong is my conviction of the correctness of my views, founded as they are upon long practical experience, and on an attentive observation of cases. Distrust the theories of the laboratory! Remember the remark of my honourable scientific friend Dr. Lasègue, to the effect that, though chemistry is capable of rendering to medicine the most important services, the chemist goes beyond his legitimate sphere when he draws clinical inferences from the experiments of the laboratory; and that chemistry does not approach any nearer to medicine, when teaching the art of preparing and analysing medicines, than it approaches painting, when it furnishes fixed and durable colours. This proposition, true in respect of the general articles of the materia medica, is specially true of mineral waters, although for them chemistry is endeavouring more than ever to monopolise the right of explanation and to constitute herself the decisive judge. Whatever may be said to the contrary, mineral waters are not simple medicines: whatever may be the mineral element which analysis shows to be predominant, that element does not act alone: by associating with it quantities more or less notable of very various principles which the chemist can isolate, as well as others which have not yet been discovered, nature has given to the mineral element a something which we seek every day to imitate in our prescriptions, when we endeavour to increase or diminish the effects of a particular medicine, by associating it with other medicines. In taking into account, however, the particular effects of this or that ingredient of mineral waters, we cannot attribute them to a single principle, however dominant chemical analysis may show it to be; it is by clinical experience alone that we can arrive at a correct judgment on this point. So true is this, that the forms of dyspepsia associated with a formidable paludal or other cachexia are beneficially modified by waters very different from those of Vichy or Pougues, by waters, the mineral ingredients of which elude, so to

speak, chemical analysis, such as the waters of Plombières and of Bagnères-de-Bigorre. Although the first are placed in the class of sulphurous soda waters, and the second are considered as sulphurous lime waters, they have so small a proportion of mineral ingredients that the predominance of one or other mineral ingredient either destroys the classification or renders it purely artificial. If we compare them in respect of their composition with the waters of the Seine, taken at different points of the river as it passes through Paris, with the waters of Arcueil, or with those of the artesian well of Grenelle, the superiority will rest with the latter, at least so far as the waters of Plombières are concerned. But, nevertheless, medical experience tells us that the waters of the Seine have no other peculiar property than that of occasioning diarrhœa (generally slight) in persons not accustomed to use them, which cannot be attributed to the small quantities which they contain of the salts of soda and chlorides. So far as I know, these waters have never yet been inserted in any of the voluminous lists of mineral waters which have been published. In thus instituting a parallel between the waters of the Seine, Arcueil, and Grenelle, and those of Plombières and Bagnères-de-Bigorre (to which I would add the waters of Néris or Mont Dore which are scarcely more mineralised), I am far from wishing to deny the efficacy of these justly celebrated thermal springs. Plombières and Bagnères-de-Bigorre in the particular class of cases now before us, triumph over rebellious dyspepsia, in virtue of a therapeutic action the nature of which eludes us, and which I do not even attempt to explain. Under their salutary influence, the appetite is restored, and the constitution renovated. Patients affected with dropsy and visceral engorgements who have arrived at Plombières or Bigorre in a deplorable condition leave these places after a single season in a notably improved state, and often recover in a manner quite unexpected.

Gentlemen, the sympathetic dyspepsia which so often accompanies uterine affections, such as displacement of the womb associated with chronic catarrhal inflammation, is often cured simultaneously with the spontaneous cure of the uterine affection. In these cases, local treatment, cauterizations of the neck, for example, which will modify the catarrh when dependent upon ulceration, properly applied bandages, hypogastric bands, more rarely the use of pessaries—local treatment in fact—will prove very useful, not only for the uterine lesion, but also for the gastric symptoms which depend upon it. These means,

however, are not in general sufficient in themselves; it is necessary to have recourse to general treatment, in which an important place must be assigned to sea-bathing and hydrotherapy. You will sometimes see women restored, as it were from death to life, after not more than eight or ten days of sea-bathing. But then it is essential that the sea-baths be taken in a proper manner: by a proper manner, I mean, that they be of short duration, at the utmost not exceeding five minutes. The best way of proceeding is to administer the sea-bath *à la lame*. You all know what this means: an attendant taking the patient in his arms, presents her five or six times in succession to the wave, which passes over her. Powerful reaction succeeds this rapid immersion; the temperature of the skin rises. Sometimes after the fourth or fifth bath, the skin becomes the seat of a peculiar eruption, to which the name of maritime urticaria (*urticaire maritime*) has been given. This reaction produces a wholesome derivative action upon the internal organs, as well as a salutary influence upon the digestive apparatus: the gastric functions become normal, the appetite improves, and the dyspeptic symptoms disappear. Simultaneously with these beneficial changes, the uterine lesions likewise improve, the catarrhal affection ceases, and the uterus loses its morbid susceptibility. The general health becomes better, the patient acquires tone, and is able to bear those variations of temperature which formerly occasioned uterine catarrh, just as they might occasion in others pulmonary catarrh, coryza, or sore-throat.

Similar beneficial results may be obtained from a course of hydrotherapy conducted at a hydrotherapic establishment; or, if that cannot be obtained, by hydrotherapy carried out at home in accordance with the plan which I have already described to you.

Before concluding this long series, I have still some words to say upon that form of dyspepsia associated with sluggishness of the large intestine and obstinate constipation.

A remedy lauded by Bretonneau, I mean belladonna, is marvellously efficacious in cases of this description. We must begin by prescribing it in very small doses: a centigramme of the extract incorporated with the same quantity of the powder of the leaves, may be administered, in pill or powder, morning or evening. If the constipation does not yield after one or two days, the dose of belladonna may be gradually increased, according to circumstances, to one, three, four, or five centigrammes; but five centigrammes in

one day, must never be exceeded. Thus administered, belladonna is perhaps the most active remedy with which I am acquainted in this kind of dyspepsia. It is generally sufficient to produce regular stools, and, at the same time, to re-establish the digestive functions so thoroughly, that individuals who had fallen into a state of deplorable debility and emaciation, rapidly regain strength and plumpness. The remedy, however, acts in these cases only in an indirect manner, that is to say, by restoring to the large intestine its lost activity: but this activity is communicated synergetically to the other parts of the digestive tube, and thus it is, that the stomach regains its original energy.

When the belladonna proves insufficient, its operation may be assisted by giving the patient every evening a teaspoonful of castor oil, simultaneously with the belladonna: the castor oil may be administered in a capsule of gelatine. When the bowels are regularly open, these means may be discontinued. This treatment, I repeat, is sovereign in the cases now under consideration: but it is in an especial manner sovereign, as a means of restoring regularity to the disordered functions. To secure a continuance of these beneficial effects, the co-operation of the patient is required. In the acts of animal life, habit plays an important part. Upon this subject might be written a long and interesting chapter of general medicine. You know, that according to country and social condition, persons become habituated to eat at regular hours, and except at these hours do not feel the want of food. In the same way, the large intestine may become accustomed periodically to contract itself, and the bladder to discharge its contents at regular times—which times may be at pleasure approximated or made more distant. This is a fact, which may be profitably borne in mind in the treatment of such cases as we are now considering. Patients affected with obstinate constipation dependent upon sluggishness of the intestine, ought to go regularly to the closet every day at the same hour; at first, their efforts may be unavailing, but they must nevertheless persevere, and if they do so, the results will ultimately prove satisfactory.

Should these means—should the belladonna treatment—prove inadequate, injections are permissible. But, if used, it is essential that the injections should consist of cold water, and be administered in very small quantity: injections of tepid water ought to be expressly prohibited, for their use ultimately leads to an increase of that atony of the intestine which we are endeavouring to combat.

Let us suppose that the constipation has resisted the use of all these means; it is then necessary to have recourse to purgatives, particularly to aloetic preparations, such as dinner pills, *grains de santé*, and similar remedies. Immediately before eating, from one to four of these or such like pills may be taken. Rhubarb in a dose of from fifty centigrammes to a gramme may be advantageously substituted for the pills, without causing diarrhœa, and with the effect of producing only one stool regularly in the 24 hours.

In these cases, certain mineral waters are likewise indicated. I refer to the waters of Seidschütz and Sedlitz in Bohemia, which contain sulphate of magnesia, as well as to Forbach, in the department of the Moselle, whither patients are sent for one or two seasons.

I intend afterwards to treat more fully the important question of constipation, which to-day I cannot do more than touch upon in a sketchy manner.

Gentlemen, I beg your attention for a few minutes whilst I speak of a new treatment which you have seen me employ, with decided benefit in a very severe case of dyspepsia in St. Bernard's ward.

The anatomical integrity of the blood, if I may use such an expression, is a condition essential to the normal performance of the functions. Whenever the blood is seriously altered, either in the proportion of its constituents, or by the addition of some septic or toxic principle, it necessarily follows that each organ is modified in intimate texture, or at least in respect of nutrition; it also happens that each organic molecule in contact with vitiated blood no longer bears a normal relation to the nutrient fluid, and that the due performance of the functions is in consequence seriously impaired. Hence arise the mal-nutrition of tissues, and the disturbance of the organic functions.

To speak only of anæmia:—we understand perfectly well that the blood deprived of one essential constituent is no longer sufficient for the formation of tissues, and that the nervous centres of animal and organic life are destitute of their natural excitement, and can no longer exert upon the organs which they supply an influence which they have lost. It is evident then that the digestive functions are disturbed, because the tissues are no longer in a normal state, because the ganglionic nervous system no longer regularly supplies the required influence of nervous power, and because the organs themselves, even if in a state of perfect anatomical soundness,

cannot extract from the blood all the materials which ought to enter into the secretions.

When anæmia is associated with chlorosis properly so called, the preparations of iron prove rapidly beneficial: even in cases in which iron is badly borne for a few days, it generally at last triumphs over the disease. But the anæmia which follows excessive uterine hemorrhage, particularly that which slowly supervenes as a consequence of great physical fatigue, protracted moral suffering, excess in venereal pleasures, bad feeding, too protracted lactation, a continuance in unfavorable conditions, that anæmia so common in hospitals, particularly in very young girls who have become mothers, and attempt to perform their maternal duties, though ill-fed and hard worked—anæmia of this kind is not in general improved by ferruginous remedies; and, as it is accompanied by excessive debility, and insurmountable dislike of food, we cannot always restore the aptitudes of the stomach, the organ to which, in the first instance, we make our appeal, knowing that good nutrition is the primary condition essential to recovery. Whatever we do, the patients die oppressed by an insurmountable loathing of food, burning fever, and ardent thirst. On anatominal examination of the bodies, nothing morbid can be detected, except universal paleness of the tissues, and a colourless condition of the blood.

Gentlemen, let me relate to you the history of an illustrative case.

On the 5th January, 1864, a young woman, 25 years of age, was admitted to St. Bernard's ward. She had been confined three months previously, under the very deplorable moral and hygienic conditions commonly met with in girl-mothers [*filles-mères*]. Poor and isolated, she was compelled to engage in a toil as ceaseless and fatiguing as it was ill-paid: besides, she suckled her child, and was without sufficient food: she was thus the victim of twofold exhaustion. She gradually fell into a state of extreme anæmia and debility, which it is not easy to depict.

Her emaciation was excessive; her debility was extreme. The skin presented as pale and cachectic an appearance as it is possible to conceive. She coughed: she had constant fever, which redoubled its severity at night; and her appearance, as well as the general phenomena of her case, indicated the existence of pulmonary phthisis. It was, therefore, with extreme astonishment that I could not discover any abnormal sounds in the chest, and that I heard the natural vesicular murmur in every part of the lungs from base to apex.

The most minute investigation, moreover, revealed nothing morbid in any other part of the organism. It was therefore necessary to admit that the case was one of *febris alba virginum*.

From the 5th to the 10th of January, the hectic fever continued, and, in spite of all our efforts to prevent it, the strength progressively declined. The following is a description of the patient's condition on the 10th January:—the pulse in the morning was 120, and in the evening 130; the fever was ardent; the skin was dry and burning: diarrhœa alternated with constipation. Nothing abnormal was met with on auscultation. On the 11th, the patient had the initiatory symptoms of small-pox—rachialgia and bilious vomiting. The pulse rose to 140. On the 12th, thirty-six hours after these prodromata, a few scattered papules appeared, as anæmic as the skin itself on which they were developed, and more sensible to touch than to sight. On the 13th the papules continued in the same state, and were not surrounded by any areola. There was great prostration. On the 14th, the patient died. During life, the blood was examined, and found to contain very few white corpuscles.

At the autopsy, the organs were found generally in a colourless condition. The heart was small, and exceedingly anæmic. There was no trace of tubercles in the lungs, which, as in severe cases of fever, were congested throughout their two inferior and posterior thirds. The spleen was voluminous, tense, hard, and of a hepatised appearance: the Malpighian bodies were evidently of increased size. The liver was bulky, and colourless.

I have no doubt that this woman sank from anæmic cachexia, and that the attack of small-pox was only the immediate cause of death. The organism was in so exhausted a state, from the daily loss to which it was subjected, and the want of reparative aliment, that, as in the animals experimented upon by Chossat,[1] a degree of inanition had been attained which rendered death inevitable.

I have already, Gentlemen, often had occasion to deplore my inability to be of any use in cases of this description, and I long sought vainly for a weapon to serve me in the circumstances. I am indebted to my friend and hospital colleague, Dr. Demarquay, for having enabled me in some cases to restore women to life, whom I had been looking upon as virtually dead; and who were in precisely the same position as the young patient whose sad history I have just related to you.

[1] Chossat:—Recherches Expérimentales sur l'Inanition. Paris: 1843.

The curative agency to which I refer is the respiration of pure oxygen gas.[1] You have seen in our clinical wards the successful results of this treatment, results which have not astonished you less than they have astonished me.

The results were as remarkable when looked at from a therapeutic point of view as they were physiologically unexpected and paradoxical.

The woman whose case I am now going to describe was admitted on the 1st April 1864; and is now a patient occupying bed 7 of St. Bernard's ward. She is 22 years of age. She had been, like the other woman whose case I have just described, recently confined: like her also, she was anæmic, and exhausted by lactation. Her face was exactly like that of a dead person. The first step in the treatment was to separate the child from the mother. There was, however, no improvement between the 1st and 14th April, that is to say, during the first fourteen days in which she did not give suck. On the contrary, there was a continuance of the fever: the pulse ranged between 120 and 130: the skin was dry and hot: and the debility went on increasing. So great was this debility, that the patient could not sit up in bed without fainting, and on this account, auscultation was almost impossible. Nevertheless, it was ascertained with certainty that the lungs were healthy. As there was no tubercular disease, as tonics and ferruginous remedies had failed, and as there was complete anorexia, I resolved to try the effects of inhaling oxygen, with a view to restore appetite and promote digestion. The patient commenced this new treatment upon the 14th, but was so weak, that after the second inspiration of this gas she became insensible from the effort made in inhalation. However, I recommended her to persist, and to inhale during the day, at intervals, a quantity amounting to five or six litres. For three days, she inhaled much less than that quantity, and during that period, the amelioration was not very perceptible.

But, from the 19th, the patient could sit up in bed with impunity; and could eat a little. The pulse was not more than 104 in the minute. On the 21st, she was able to leave her bed for an hour: she asked for food, particularly for vegetables. The pulse was not more than 92. The skin was cool. Upon the 24th, the pulse was 80. On that day, the patient went down into the garden

[1] Demarquay:—Essai de Pneumatologie Médicale; Recherches Physiologiques, Cliniques, et Thérapeutiques sur les Gaz. Paris: 1866.

and ate voraciously. To-day, 30th April, and for the four preceding days, the pulse has ranged between 72 and 80. The young woman feels herself so well that she wishes to leave the hospital. I have however asked her to remain, telling her that her cure is not yet complete. In fact, she still continues pale, and the fibre has evidently regained its tonicity to a greater extent than the blood has regained its normal constitution.

One strange and unexpected phenomenon which accompanies the inspiration of oxygen is the production within the chest of an agreeable sensation of coolness by each inspiration of the gas. The pulse, being 84 on the 30th April, when the patient began to inhale the ten litres of gas, had fallen to 76 by the time the inhalation was completed, and remained at that point during the remainder of the hospital visit. The pulse becomes thready after three inspirations of oxygen, and so continues for the two or three minutes of the duration of the operation. These facts prove—were proof required—that hematosis is not accomplished in the lungs, but in the general capillaries—that during the inspiratory act, there is a simple exchange of gas in the organs called the organs of hematosis—and that, finally, the oxygen acts almost immediately upon the vaso-motory nervous system, producing contraction of the vessels.

I have now terminated my remarks upon dyspepsia. Let me again repeat, that I have avoided attempting to give more than one short chapter of a long history. In pointing out to you in a very summary manner the diverse forms, and the still more varied treatment of dyspepsia, my only object has been to show you, and smooth for you the right road, so that you may be able to follow it in your practice. However incomplete the notions may be which I have attempted to present, they will at least cause you to think. Never forget that dyspepsia will present itself to you, under aspects, and under forms the most varied. According to diversity in symptoms and individuals, it demands remedies, for employing which, general indications can hardly be formulated in a didactic manner, as their application is subordinate to a host of circumstances, impossible to foresee, impossible to point out in advance, and the appreciation of which depends entirely upon the tact of the practitioner.

LECTURE LXIX.

CHRONIC GASTRITIS.

Existence of Chronic Gastritis improperly denied in the present day. Pituitous Vomiting attributable to it.

Gentlemen :—In the present day, to pronounce the word *gastritis* is considered equivalent to the intimation of a desire to renew useless controversies raised by a defunct school. Even during the life-time of Broussais, the very existence of his famous "gastritis," which he attempted to install as the originator of all other diseases, was denied by the majority of physicians. It has not yet recovered from that negation. Frequent the different services of our hospitals, and I question whether, in a long space of time, you will even hear gastritis named!

Gastritis is nevertheless a real disease. I am speaking, you understand, of idiopathic gastritis; for no one denies, that gastritis is produced by the ingestion of certain poisons. There is also such a thing as gastritis spontaneously developing itself. I admit that it is a rare, a very rare affection. It is easy to understand that it should be rare. The stomach, from the nature of the functions with which it is entrusted, ought to be so organized as to resist energetically the causes of inflammation, which it may have daily to encounter from irritating alimentary substances. Moreover, a considerable degree of excitation is often indispensable to bring into play the functions of the organ. However enduring the stomach may be, its tolerance has limits. To pass these limits, it is necessary that (according to individual tendencies) the irritating causes should be somewhat violent, more protracted, and more recurrent than when they act upon organs of greater susceptibility.

Consequently, that irritating causes produce any serious result on the stomach, they must be very violent and deep-seated.

Pathological anatomy has made us acquainted with the lesions which characterise acute and chronic gastritis.

After saying a few words upon chronic inflammation of the stomach, I shall proceed to consider the cases now particularly under our observation.

I shall not discuss at length the different morbid colours presented by the mucous membrane of the stomach: I shall only state that grey, slate-colour, or brown, seem chiefly to belong to chronic inflammation: that the morbid colour appears in the form of spots, sometimes round, sometimes irregularly shaped, and sometimes uniformly spread over a greater or less surface. The morbid tint is in some cases black, as when the inflammation is produced by certain poisons, but the shade of black is never so deep as in cases of poisoning. Let me caution you against confounding the appearance of which I am speaking with the dark hue so frequently the result of cadaveric imbibition.

But the most essentially characteristic lesion of chronic gastritis is the alteration and hypertrophy of the coats of the stomach. Sometimes the mucous membrane alone, and at other times all the coats, mucous, cellular, and muscular, are thickened: this thickening may be partial, or it may be more decided in particular parts. The stomach then assumes an aspect similar to that presented by the bladder, when it has been the seat of chronic inflammation of that description which is called columnar bladder [*vessie à colonnes*]. This is rarely seen: nevertheless, here is an example derived from our own clinical service.

At the beginning of the year 1856, a man, aged 50, was admitted to our wards, who told us, that for some time, he had vomited all his food. He stated, that he had lost more than 40 pounds in weight during three months. He likewise complained of obstinate constipation. The disorders of digestion and nutrition had never been accompanied by fever. From my very first visit, I was struck by a fact, which appeared to negative the idea of cancer of the stomach, which was, I confess, my first impression: the complexion of the patient was remarkably fresh.

Nevertheless he had incessant vomiting. Irrespectively of meals, irrespectively of the ingestion of alimentary matters, this man vomited a large quantity of a glairy matter, similar to that contained in the urine of persons affected with catarrh of the bladder. Moreover, the glairy matter was sometimes mixed with blackish matter resem-

bling suspended soot, like the melanotic vomiting which generally characterises cancer of the stomach.

Upon examining with greater attention, and upon several different occasions, almost every day, the epigastric region, I was unable to detect the presence of any circumscribed tumour. However when, with my hand upon the pit of the stomach, I told the patient to take a deep inspiration, I felt under my fingers a sort of rubbing, which appeared to me to be produced by a stomach which was indurated. Notwithstanding the absence of any appreciable tumour, my diagnosis was—carcinoma of the stomach. This induration, as to the existence of which I had no doubt, the incessant vomiting, the presence of black melanotic matter in the fluid ejected by the mouth, both after meals and during the intervals between meals, and the notable emaciation of the patient, justified my conclusion, although the pink colour of the integument was essentially different from the cachectic pale yellow hue of persons affected with cancer. The disease made rapid progress, the emaciation increased rapidly as the patient could not be nourished; and ere long death occurred.

On opening the body, my attention was immediately directed to the stomach. It was diminished in volume, and its interior presented an appearance exactly similar to that of a urinary bladder which had long been the seat of chronic catarrh. I found no trace of a tumour, but the mucous membrane was exceedingly hypertrophied, and was so blended with the cellular coat, as to adhere intimately to it by fibro-plastic tissue. The mucous membrane seemed to be destroyed. At some points, the walls of the organ were two and a half centimeters in thickness.

I begged my distinguished colleague Professor Charles Robin to examine the stomach carefully, and to find out whether it presented any elements of cancerous disease. In giving me an account of his examination, he informed me that he had several times seen stomachs in a similar condition, that is to say, presenting only hypertrophy of the fibrous structure, associated with nearly total destruction of the mucous coat, and presenting no trace of heteromorphous products.

Here then, Gentlemen, is a case in which the autopsy placed beyond doubt the existence of chronic gastritis. Our patient who leaves the hospital to-day, and whose case has originated this lecture, evidently had similar lesions, although no doubt they were less decided and less advanced.

This man was admitted about five months ago. His very emaci-

ated condition, and the pale yellow tinge of his skin, showed that he was suffering from extreme cachexia. On admission, he stated that the beginning of his symptoms dated back six months or more. He had in the first instance loss of appetite, and soon afterwards vomiting, which for the last three months had habitually occurred after ingestion of the smallest quantity of food. Diarrhœa was then added to the other symptoms; and it alternated with invincible constipation. The general debility, and the great emaciation, were the results of disordered digestion.

In endeavouring to trace the malady to its source, we could only ascertain that the patient had lived under the most unfavorable hygienic conditions. He pursued the occupation of an itinerant seller of neck-ties, by which, for a long time, he had been scarcely able to provide a bare existence. He was ill fed, and probably worse lodged. He assured us, that he never committed any drinking excesses.

The matter vomited was chiefly of a glairy, stringy, and glutinous character: it was sometimes ejected so copiously that the spittoon was filled within the 24 hours.

Upon examining the epigastric region with the greatest care, I could not detect a tumour either in the situation of the great or the small curvature of the stomach: nevertheless, the excessive emaciation of the patient, his cachectic hue, his loss of appetite, and the constancy with which vomiting was occasioned by the ingestion of food, led me to write upon the sheet, "Cancer of the stomach" as my diagnosis. At the same time, I had not then formed an absolute opinion, and was waiting for the result of treatment to see whether or not the view which I took of the case was right or wrong. Gentlemen, you have very often found me, under similarly embarrassing circumstances, postponing my diagnosis and refraining from announcing it absolutely, till I had tried several different plans of treatment. It is not, as some might suppose, from any desire to shirk trouble, by avoiding an exact diagnosis at the first examination, that I act in this manner: on the contrary, I use from the first my utmost endeavours to make my diagnosis as rigorously accurate as possible. There are cases, however, in which hesitation is allowable; and there are others in which, although an almost absolute certainty has been obtained, there is still room for hoping that we may be deceived, cases, therefore, in which we look out for new elements to guide our judgment and correct previously formed opinions. The facts of the

case now under observation will enable you to understand clearly the explanations I wish to make to you on this point.

From the first, our patient seemed to labour under cancer of the stomach. This diagnosis necessitated my avowal of inability to do any good, and condemned me to absolute forbearance from active treatment; because experience had told me, that cancer of the stomach is an incurable disease, in which it is not only useless but even injurious to employ energetic measures. My only remaining hope was, that I had been deceived. Without, therefore, ceasing to believe that the case might be cancer of the stomach, I endeavoured to discover whether there was anything in the symptoms or progress of the disease, upon which I could lay hold, as possible signs of a curable malady.

The phenomena which I observed seemed to present a certain analogy to those presented by the patient whose case I have just laid before you; and I asked myself the question, whether this case was not also chronic gastritis. I clung to the possibility of its being so, and directed my treatment as if it were that disease.

To combat the vomiting of glairy matter, which was the predominating symptom, I had recourse to lime water, while at the same time I administered, according to the method of Graves, very small doses of opium.

The first trial of this plan proved successful. The vomiting became less profuse; and the patient began to take a little food. Diarrhœa, however, having supervened, I substituted for the lime water and opium, nitrate of silver, giving from eight to ten centigrammes during the day, in the form of pill, each pill containing one centigramme of the nitrate.

I pursued this plan of treatment, exactly as if I had been endeavouring to modify a catarrhal affection of the mucous membrane of the bladder or pharynx by injections or caustic applications.

During six weeks or two months, I thus combined my therapeutic measures, alternating opium and alcalies with nitrate of silver. Under the influence of this treatment I have had the satisfaction to see so great an amelioration in the symptoms, that the patient is able to-day to leave the hospital with restored appetite and good digestion, and notably increased plumpness—in a word, in a state of health relatively most satisfactory.

Although this case, which I consider to be an example of chronic gastritis, leaves some uncertainty as to its nature, it is not the less

valuable to you as a source of instruction. Granting that we have only arrived at an imperfect result, that result, so far as it goes, is good. When I come to speak of diarrhœa, you will see how often that affection is the consequence of an intestinal inflammation similar to that which attacks the bronchial tubes, and supervenes under the influence of the same causes. Very recently I saw, in my consulting room, a young lady, presenting all the symptoms of chronic gastritis, with, however, very frequent attacks of a more acute character. Whenever she was exposed to cold, she had these acute attacks, and then there immediately supervened vomiting of glairy matter. It is easy to understand why it should be so; nay, Gentlemen, let me add, that I do not see how it could be otherwise. A thousand times we see exposure to cold produce or aggravate cystitis, uterine catarrh, pulmonary catarrh, catarrh of the mucous membrane of the nasal fossæ, and why should we expect that the internal membrane of the stomach should alone be exempt from affections to which almost all other mucous membranes are subject?

It is in this form of chronic gastritis, that sulphurous baths, hydrotherapy, and sea-bathing, are pre-eminently useful: it is in such cases, too, that patients, after annually making useless journeys to Carlsbad, Vichy, and Plombières, are speedily cured by the Luchon waters, sea-bathing, or hydrotherapy.

I am unwilling to leave this subject, Gentlemen, without saying a word upon the affection called vomiting of phlegm [*la pituite*]. Under this name, is generally understood, a disease characterised by vomiting of glairy matter, the vomiting occurring chiefly in the morning before eating. The quantity of mucus ejected is sometimes very considerable. I am not speaking, Gentlemen, of that kind of glairy salivation, which is so often the precursor of vomiting, and which is evidently the product of the salivary glands and the muciparous glands of the pharynx and mouth, but is not vomiting: what I refer to is glairy vomiting. This is most frequently observed in persons addicted to excess in alcoholic drinks,[1] and is usually coincident with great want of appetite: it is not, however, at all incompatible with obesity. I have always considered this kind of vomiting as a sign of chronic gastritis, and I place it in the same category with the vesical

[1] See the Lecture upon Alcoholism, p. 421, Volume Third of this Translation.

catarrh which follows acute cystitis, and the glairy stools resembling the spawn of frogs, so frequently observed after acute colitis and dysentery. I know quite well that certain persons may have this pituitous vomiting without any apparent deterioration of health: but do you not know many men with chronic cystitis, whose general health is unexceptionable, and many patients with bronchial catarrh, and profuse glairy expectoration, who are invalids only in a small degree? Can we on that account deny that there exists an inflammatory affection of the vesical or the bronchial mucous membrane?

The treatment of pituitous vomiting in no respect differs from the treatment of chronic gastritis.

LECTURE LXX.

SIMPLE CHRONIC ULCER OF THE STOMACH.

Gastralgia with Stitch in the Ensiform and Rachidian Regions is not exclusively a Symptom of Simple Ulcer of the Stomach.—It may be absent in this affection, and it may also be met with in Diseases of the Stomach of very different Characters.—The same is true in respect of Hæmorrhage from the Stomach and Intestines independent of Organic Change (in supplementary Hæmatemesis, for example), and in Chronic Gastritis.—Hæmorrhage, a character common to Simple and Cancerous Ulceration, may be absent.—In Cancer, Hæmorrhage is sometimes as profuse as in Simple Ulceration, although generally the Hæmatemesis of Cancer is less than the Hæmatemesis of Simple Ulceration.—The positive Diagnosis of Simple Ulceration is enveloped in much obscurity.—Treatment.

Gentlemen:—In bed 8 of St. Bernard's ward, there lies a woman, aged 34, whose history is exceedingly interesting, but which I can only recapitulate in a summary manner. According to her statement, her disease is of old standing, and the result of a blow on the stomach. I do not attach as much importance to this blow as she does. There are two other facts, however, which seem to me to be of special value. In early life, this woman was periodically subject to bleeding piles. This is in itself a somewhat curious symptom, remarkable to this extent at least, that it is seldom met with in young women, at least in our country. She afterwards had periodical headaches, which came on every week, with the usual nausea and uncomfortable feelings; they continued to recur till she became pregnant a year ago. At that time, her circumstances became so bad that she scarcely had the means of procuring a bare sustenance; she was moreover illtreated by the man with whom she lived; and had a severe fall when at the third month of her pregnancy. She did not

at the time of its occurrence experience any very remarkable effect from this accident; but on the following day, was seized with bleeding from the nose, and, some hours later, with rather profuse vomiting of blood, preceded by a peculiar feeling of distress in the region of the stomach. The epistaxis complicated the diagnosis, for it became a question whether the blood which she vomited came directly from the stomach, or whether it was not derived primarily from the nasal fossæ—being first swallowed and then vomited. There were other symptoms, however, which elucidated this point. The patient complained of very violent boring pain in the stomach, resembling the sensation which she fancied might be produced by a stake pushed through the ensiform cartilage into the stomach. This pain radiated through the corresponding dorsal region, and presented all the characteristics of the pain which Dr. Cruveilhier attributes to simple ulcer. She miscarried, had profuse diarrhœa for three months, and upon one occasion passed blood by stool. The diarrhœa ceased, but the pain in the stomach became more acute. Every four or five days, sometimes more and sometimes less frequently, she vomited profusely a liquid resembling coffee grounds, or, to use a more exact comparison, soot dissolved in water. Probably the stools were of a black colour; but upon this point we obtained no information.

When I first saw this patient, I was struck with her extreme emaciation, sunken eyes, and deep yellow tinge of skin. There was nothing, however, distinctive in this colour of the skin. She told us that her skin was naturally brown; so that it was difficult to appreciate how much of the cutaneous appearance was respectively dependent upon anæmia and cancerous cachexia.

She complained of a total want of appetite, and her disgust for food was increased by the dread of arousing pain by ingestion of the smallest quantity of aliment. Pressure over the pit of the stomach occasioned pain.

The question was, whether these symptoms depended upon cancer of the stomach, upon simple ulcer of the stomach, or merely upon supplementary hemorrhage. In relation to the last point, remember that I told you, that this woman in her early youth had been subject to bleeding piles. Give special attention to that fact.

It is not uncommon for men at the period of puberty and adolescence to have periodical epistaxis, and at a more mature age periodical bleeding from piles. Now, the fact that a flux of this nature occurred in our patient, may indicate an unusual tendency to

hemorrhage. This individual passed from infancy to puberty, when the menstrual function was established: the bleeding from the piles then ceased, and headaches supervened, which continued to torment her for twenty years, but did not recur from the time that she first became pregnant. It was then that the gastro-intestinal hemorrhages supervened. Is there not ground for supposing that these hemorrhages were analogous to the former hemorrhoidal fluxes which had been replaced by the menstrual uterine flux? May it not be asked whether the menstrual flux being suppressed consequent upon pregnancy, the hemorrhagic tendency was manifested in the stomach?

Admitting that this hemorrhagic tendency did not constitute the whole disease, it certainly played a great part in it. The frequent return of the symptoms without that periodicity usual in supplementary hemorrhages, the boring pains by which they were accompanied, their predominating seat being the ensiform cartilage and corresponding dorsal region, disposed me to adopt the idea that there was a serious lesion of the stomach; and in what I saw, I had no difficulty in recognising the symptoms attributed to simple ulcer.

The age of the patient, the total absence of any tumour or induration in the epigastric region (which the excessive emaciation and the great flaccidity of the abdominal parietes enabled me thoroughly to explore), led me to conclude that cancer did not exist. I adopted the more willingly my diagnosis of *simple ulcer of the stomach* that I felt of how little use I could be in the event of this woman's malady being carcinomatous. My powerlessness for good would in such a case have been all the greater that the hemorrhages recurred twice or thrice a week, a frequency of recurrence which did not allow me to entertain the hope of being able to prevent them.

Adopting, therefore, the view that the patient was suffering from simple ulcer, I at once had recourse to the use of preparations of nitrate of silver. I began by giving five centigrammes during the day, divided into five pills; at the same time, with a view to assuage the pain, I prescribed the extract of opium in pills containing one centigramme, of which she never had occasion to take more than four in the twenty-four hours. My object was to act upon the visceral lesion by the nitrate of silver, just as I should have endeavoured to act upon an ulceration of the pharynx or skin by the solid nitrate.

The symptoms moderated after some days of this treatment:

there was no return of the hemorrhage: the pain abated; and digestion, till then painful, and even impossible, became normal. I gradually diminished the dose, but did not discontinue the opium and nitrate of silver. Even when there was good reason to suppose that the cure was complete, the patient continued to take every day a pill of opium and a pill of nitrate of silver. As she had diarrhœa I likewise gave her a gramme daily of the trisnitrate of bismuth.

This treatment, upon the supposition that the hematemesis did not depend on the existence of a simple ulcer, and was supplementary to the menstrual flux, could do no harm, and might prove beneficial. It would tend by topical action to modify the congestion and abnormal condition of the surface of the stomach.

Whether it arose from the treatment, or simply from the improved regimen and better hygienic conditions of the hospital as compared with her home, it is certain that the black vomiting and pains ceased, that the appetite, digestion, and menstruation became normal, and in fact, that the recovery was complete. When she left the hospital, she had regained flesh to a great extent: she left at her own request, feeling that her health was sufficiently restored to enable her to resume her usual work.

In connection with this case, which possesses more than one interesting feature, I shall now mention the case of a man who occupied bed 17 of St. Agnes's ward. It is more interesting than the former case, in this sense, that the autopsy disclosed a lesion of the stomach, the diagnosis of which had proved embarrassing during life.

The patient was thirty-seven years of age, in vigorous health, and by occupation engaged as a labourer in forming earth works. He stated that three or four months before admission to the Hôtel-Dieu, he had vomited an enormous quantity of blood, and that for two or three consecutive days his stools had resembled tar in colour and consistence. From that time, he lost strength: digestion was badly performed; but he affirmed—and this is a point to which I specially direct your attention—that he had never had pains in the stomach. Digestion became more laborious than before: after a certain time, though he continued to eat as usual, he felt, to use his own expression, that the food did not go through him so well. After the vomiting blood, he often suffered from a general feeling of discomfort: he found that the resuming of his work was too much

for him. He was pale, short-breathed, and panted upon the least exertion.

Three or four months had passed without his experiencing anything note-worthy in his condition in addition to the symptoms now described; when, some days before his admission to hospital, he had a new attack of hemorrhage from the mouth, followed by black stools. During the two succeeding days, the hemorrhage recurred at short intervals; and he died on the second day, from an attack in which he lost several litres of blood. These vomitings of blood were accompanied by melanotic stools, and every day the vessel (which I ordered to be kept for examination) contained from a quarter to half a litre, and sometimes even a litre of matter resembling tar. It is unnecessary to add, that an extreme degree of anæmia was the result of these great losses of blood. The skin of the patient had that peculiar tint of old white wax, which is to be seen in women exhausted by profuse hemorrhage.

In exploring with very great care the region of the stomach, I was unable to find the smallest trace of a tumour. The patient, when interrogated, stated that he swallowed food with perfect facility; and this statement was of itself sufficient to exclude the idea of his having carcinoma of the cardiac extremity of the stomach, which on account of the deep situation of the parts would have escaped discovery by manual examination. There might, however, be a tumour near the smaller curvature, or at the bottom of the large pouch, and which consequently, we should also be unable to feel.

Nevertheless, the attacks of hematemesis, the great embarrassment experienced during the first stage of digestion, led me to conclude that there was cancer. There was one element wanting in this diagnosis, viz. pain in the epigastric region; for the patient had never complained of more than discomfort. Let me add, however, that pain is a diagnostic sign, which is often absent in cancer of the stomach.

At the autopsy, the stomach was found full of blood. At about from two to three centimeters from the pyloric orifice, there was a depressed velvety surface bounded by an elevated edge, about the size of a two-franc piece. In the centre were seen two open mouths of arteries, sufficiently large to admit a small probe; and one of them was plugged by a clot. These vessels had evidently been the source of the hemorrhage; and I may remark in

passing, that this is one of the most unusual ways in which hematemesis is produced: I shall afterwards describe to you its ordinary manner of production. It was, however, the microscopic examination which enabled us to detect the error in diagnosis: there was no trace of cancer—the lesion was simple chronic ulcer of the stomach.

At a time when the researches of my scientific colleague Dr. Cruveilhier,[1] imparts fresh interest to this important question, I cannot neglect the opportunity afforded by these cases of speaking to you about an affection, the reality of which was for a long time disputed.

To Dr. Cruveilhier unquestionably belongs the merit of having first described simple chronic ulcer of the stomach, *as a disease, special in its nature, and quite distinct from cancer of the stomach, with which it had till then been confounded.* In 1830, that is to say more than thirty years ago, this distinguished professor devoted a special chapter to simple ulcer; five years later, in the 20th fasciculus of his atlas of pathological anatomy, he added new facts, and new drawings; and in 1838, he published a memoir upon the subject.[2] In 1839, Professor Rokitansky, of Vienna, published his work;[3] the subject was taken up afresh in 1856 by M. Cruveilhier; and we find in the Archives Générales de Médecine for February and March of that year, the memoir which a short time previously he had communicated to the Institute of France.

While I acknowledge the great service rendered to medical science and art by my honourable colleague by his having established decisively the existence of a disease previously unknown, I cannot help thinking that he has somewhat exaggerated the frequency of the cases in exagerating the significancy of the symptoms. What are the *symptoms?* At the beginning of the disease, the patients complain of discomfort, of dull pains in the region of the stomach, of a feeling of weight during digestion which is difficult and painful. The appetite diminishes and is gradually lost: at a certain period of the disease, the repugnance for food is increased by knowing that eating occasions pain. The sensation of weight and fulness arouses and intensifies the acute pains of which I have been speaking, and at

[1] Cruveilhier:—Anatomie Pathologique du Corps Humain. Folio.

[2] Revue Médicale.

[3] Rokitansky:—De l'Ulcère Perforant de l'Estomac. *Œster. Med. Jahrb.* 1839: quoted in *Archives Générales de Médecine*, 1840.

last the patients are never at ease, except when they have the stomach empty.

Though there is observed in some cases, instead of anorexia, an excessive, craving, capricious appetite; and though in some individuals relief from pain is experienced after eating, such cases are exceptional.

Wasting, which rapidly progresses, is the consequence of this defective alimentation. Although the patients continue their usual occupations, they go on day by day losing strength, and visibly become more and more emaciated. At the same time, their mental state is affected; they become sad, melancholy, and easily irritated.

Up to this point, you see, that there is nothing characteristic in the signs, which are likewise the signs of many forms of dyspepsia, as well as of incipient cancer. But, at a certain time, the symptoms become complicated with others of real importance, viz. pain and hematemesis.

The pain has something special in its character. It is generally confined to the region of the ensiform cartilage. It has a boring character. Or, the pain which is occasioned may be compared to that resulting from a burn, a raw wound, or a violent pinch. It comes in paroxysms, and has exacerbations several times during the day. It is increased by pressing the hand upon the pit of the stomach, and is excited by ingestion of food: supervening sometimes, it is true, a little later, it continues during the whole period of stomachal digestion, and is never so severe as at that time. To this stomachal pain, when it has acquired a high degree of intensity, there is added pain of a similar nature occupying the corresponding dorsal region, that is to say, over the first lumbar vertebra or the three last dorsal vertebræ. In some cases, in place of remaining confined to an epigastric, ensiform, or dorsal situation, the pain radiates upwards, behind the sternum, in the direction of the œsophagus, extends into the intercostal spaces and region of the kidneys.

Let us stop for a moment to consider this symptom, and to inquire whether it possesses the importance, which some have attributed to it. Whatever may be its importance, its signification as a diagnostic sign of simple ulcer is far from being absolute: in the first place, it is met with in affections which have nothing in common with the disease we are at present studying; and again, notwithstanding the assertion to the contrary of my honourable colleague, it may be wanting, in this affection. No doubt this is a rare occurrence, but that it does occur is conclusively established by the

case which I have just related to you, as well as by the history of a case reported by Dr. Louis Gubian to which I shall afterwards refer.[1]

In cancer of the stomach, we often observe pain in the stomach, characterised in the same manner as the pain accompanying simple ulcer. I therefore think that it is drawing too subtle a distinction to say that the pain of cancer caused by the spasmodic contractions of the stomach is analogous to that caused by contractions of the bladder in retention of urine or by the contractions of the womb in labour; and that the ensiform and dorsal pains of simple ulcer are of an entirely different kind.

According to the admission of M. Cruveilhier himself, the sole peculiarity by which one can distinguish idiopathic gastralgia from the pain which accompanies simple ulceration, is that in the latter, the symptoms are permanent with alternations of exacerbation and remission; while in the former, the pain is temporary, supervening and ceasing abruptly, and being, moreover, at once relieved by opium. You can understand, Gentlemen, how impossible it would be to grasp these delicate distinctions as elements of diagnosis. In simple ulceration also, although the pains may not be so acute and boring, M. Cruveilhier distinctly admits that they may be decidedly sharp, boring, and intermittent. In respect of the characteristic sign derived from absolute relief being afforded by opium when the affection is only neuralgia of the stomach, the remedy being inoperative when there is a simple ulcer, I reply, that the most unequivocally idiopathic gastralgia will often resist opium, which on the other hand will moderate or perhaps completely remove pains depending upon simple ulcer or cancer. This we have seen in our patient of St. Bernard's ward.

I say, therefore, that the pain, however special its character may appear, is insufficient to enable us to distinguish the disease of which I am now speaking.

A similar remark is applicable to black vomit, hematemesis, and the melæna usually accompanying it.

In fact, though gastrorrhagia, is observed in the majority of cases of simple ulcer, it is a symptom which is sometimes wanting: moreover, it is a phenomenon also belonging to cancer of the stomach, which sometimes shows itself in non-ulcerous chronic gastritis, and is likewise met with in a considerable number of cases, presenting

[1] Gubian:—*Gazette Médicale de Lyon*, 1856.

no apparent lesion of the organ which is the seat of the hemorrhage.

This part of the subject possesses so much clinical importance, that I must devote some minutes to its discussion; but before doing so, allow me to say a word upon the mechanism of these hemorrhages. They often originate in the arteries or veins involved in the ulceration, their walls being ulcerated and destroyed. This was the state of matters, in our patient of St. Agnes's ward, whose case I have just described. At the autopsy, we found two arteries with open mouths. You can understand that under such conditions, hemorrhage will be more or less profuse; and that it may suddenly destroy life if an important vessel be involved.

Generally, the hemorrhage takes place from small vessels seen at the autopsy upon the surface of the ulcer, eroded and jagged, some being obstructed by very tenacious solid clots, and others by soft clots which become detached upon the least handling. It is from these small vessels, that the hemorrhage proceeds: it is slight, and takes place almost daily, becoming mingled with the food, thus giving rise to black stools and black vomit. However, matters do not always so proceed, and the hemorrhage is frequently the result of a vascular lesion invisible to the unaided eye, situated around the ulceration: in the same way, there is hyper-secretion of the gastric fluids. Here, the same thing occurs as in cancer of the stomach; for, in the first instance, in cancerous tumours not yet ulcerated, the hemorrhage does not take place from the surface of the tumour but from the mucous membrane. This is the case in simple ulcer, hematemesis being the first symptom of the affection, and continuing when ulceration has not involved the parietes of the vessels.

I have said, Gentlemen, that gastrorrhagia is a usual symptom, of simple ulcer of the stomach; but I have also said that this symptom is sometimes wanting.

During the year 1858, I saw in consultation with my friend Dr. Beylard, a young man, an American, who sunk in a few hours, under formidable abdominal symptoms.

In this case it was difficult to obtain an account of the immediate antecedents of the patient. We only learned that he had arrived from London, where he had given himself up for about a week to daily excesses of the table. When I saw him, he had symptoms of cholera, viz. cyanosis, coldness, cramps, absence of pulse, and suppression of

urine. Both Dr. Beylard and I were struck with the remarkable circumstance, that there were neither alvine dejections nor vomiting.

The dead body of this young man was taken to America, where by desire of the family an autopsy was made. The physician entrusted with its performance was good enough to send an account of the details to Dr. Beylard, from whom I learned that there had been found indications of subacute peritonitis, occasioned by a perforation in the centre of a simple ulcer of the stomach. Now I was well acquainted with this young man, being in the habit of seeing him daily at the house of his mother, whom I was attending for an affection of the uterus; and he then appeared in the enjoyment of perfect health, digestion being in a perfectly normal condition.

From the absence of characteristic symptoms, and in particular from the absence of hematemesis, this case presents a great analogy to the other case which I have just detailed.

Allow me to read to you from the Gazette Médicale de Lyon for 1856 Dr. Louis Gubian's case:—

"In number one of the medical clinical ward, there lay, on the 24th August, 1856, Clément Favorain, forty-seven years of age, a stone-hewer. This man, of very so-so constitution, having in a marked manner the lymphatic temperament, and a small amount of intelligence, had always led a morose and pitiable existence. He was first an excavator of earth works, then a hewer of stones, either in the quarries or on the roads, exposed to all the vicissitudes of the seasons, often without work, ill-fed, drinking only water, either plain or mixed with doctored beverages, taking alcohol very rarely and in very small quantity, and not having aliment sufficient in quantity or adequatively reparative. The appearance of the patient, on his admission to the hospital, denoted a condition of misery and suffering. His face presented a colourless appearance, which he said was usual: and his emaciation dated back for several years.

"He only complained of some pains in the epigastric region which he had not felt for more than a few days. They were not intense: they were wandering, slightly increased by pressure; and their maximum intensity was not at the ensiform cartilage. For about three months, his appetite had diminished; and during that time, digestion was slow, difficult, accompanied by bitter, nidorous eructations, tension of the epigastric region, and some flatulent distension of the abdomen. He had not had any kind of vomiting.

"Palpation of the stomach indicated nothing abnormal, nor did it reveal the existence of a tumour.

"The tongue was thick, and a little whitish at the base. The patient had neither appetite, nor disgust for particular kinds of aliment. He had no repugnance to butcher meat. He usually suffered from obstinate constipation.

"Notwithstanding the discomfort which he felt, he had no fever; and had continued his severe and toilsome labour as a stone-breaker.

"From the symptoms of which he complained, there was reason to believe that his malady was simple dyspepsia, and as such it was treated till the 15th September: during that period, no new symptoms supervened. On the 15th September, however, he complained of pain in the abdomen particularly on the left side, of incontinence of urine, and of œdema of the scrotum. Next day, the face presented a puffy, œdematous appearance. These symptoms alarmed Professor Teissier (of Lyons) who had on that very day resumed charge of the clinical wards. Upon an attentive examination of the organs, there was only discovered dropsical infiltration, which was greatest in the sides, accompanied by acute pain in these regions, particularly in the left side posteriorly, and in the neighbourhood of the kidney. The urine, when examined by nitric acid, showed no trace of albumen.

"In the evening, the patient had oppressed breathing; and ere long the mucous râles of the last agony were heard. At this time, the pulse became quick, small, and irregular: afterwards, the circulation became slow, the extremities grew cold; and death occurred during the night.

"At the autopsy, a litre and a half of fluid was found in the peritoneal cavity. There was great thickening of the coats of the stomach in its two inferior thirds: its internal surface had a shrivelled, plaited appearance, presenting elongated elevations formed by very flexuous folds separated by deep depressions, resembling those sometimes seen on the muscular coat of the bladder, and which are known by the name of columnar bladder. Near the cul-de-sac of the stomach, about the middle third of the great curvature, there was a depressed, velvety [*tomenteuse*] ulceration, slightly twisted by the folds of mucous membrane which marked out its circumference by an elevated margin perfectly circular in form. The diameter of the ulcer was about that of a two-franc piece: in

depth, it reached the muscular coat, which was fully five or six lines in thickness. This ulcer seemed to be in progress of cicatrisation: it was not surrounded by any vascularity. The mucous membrane presented neither marked villosities nor pultaceous nor gelatiniform softening: it was only injected, and slightly hypertrophied, in which latter condition, the sub-mucous tissue participated."

I have now laid before you a case in which the symptoms characteristic of ulceration were presented in the first instance, and in which it might erroneously have been concluded that there was cancer of the stomach.

On 10th December 1863, a woman, aged forty-nine, came into St. Bernard's ward suffering from an abdominal affection. She had fever, greatly altered countenance, and suffered from severe pain in a zone comprised between the two hypochondria and the epigastrium. She had a constant, dry cough, and great oppression of the breathing. On palpation of the abdomen, there was felt a hard, resisting mass, which extended towards the right side, moved with the diaphragm, and was evidently the enlarged liver. The epigastrium was manifestly protuberant: on percussion, a tympanitic sound was elucidated. In the line between the epigastrium and left hypochondrium, there was discovered a hard, oval, pretty regularly shaped mass, which was painful to the touch. Except in this situation, the abdominal walls were tolerably supple. On percussion of the chest, there was perceived a notable dulness about the inferior third on each side. At the base of both lungs, fine subcrepitant râles were heard on auscultation. In these situations, there was an almost bronchial reverberation of the voice.

The following is the history which this woman gave of herself:— About nine or ten years ago, she had had vomiting of blood for the first time: it came up in enormous quantities. At this period, she suffered from very acute pains at the pit of the stomach, and digestion was very much out of order. After this, her health was restored; but again, one or two years later, became deranged: she had vomiting of blood, and black matter was ejected. Subsequently to this period, she from time to time vomited her food, having acute pain at the pit of the stomach and in the back: after these attacks all became calm again for an interval, and then the same symptoms reappeared. At last, they ceased to recur; and there seemed to be a return to health and strength. The plumpness also, which had not, however, been much diminished, was restored. The patient

thus enjoyed passable health for two or three years, that was till about three months before her admission to the hospital, when she was again seized with vomiting: on this occasion, the matters ejected were not sanguinolent: in the region of the stomach, the pains were violent; and they darted through the diaphragmatic region. Henceforth, she had fever, dyspnœa, and cough. This conjunction of symptoms brought her to our wards.

The difficulties of diagnosis were almost insurmountable in this case. To me it was evident from the woman's story, that she had had ulcer of the stomach. Vomiting of blood, black vomit, acute pain in the epigastrium, the cessation of the symptoms, and the long interval between the times of their recurrence, were all facts in favour of that diagnosis. On the other hand, I found at the pit of the stomach, a soft, indolent, tympanitic tumour, which certainly seemed to be the stomach distended by gas. But then, in the left hypochondrium, there was a hard painful tumour, which might be formed by a cancerous alteration of the stomach. It seemed, moreover, to be independent of the liver, because the soft epigastric tumour was interposed between that organ and the tumour in the left hypochondrium.

There was, however, an element of doubt in the case: I refer to the known antagonism, so to speak, between round ulcer and cancer of the stomach. Be that as it may, the physical signs were of such a character that it was more rational to conclude from them that the disease was cancer. This woman had likewise the signs of inflammation of the diaphragm: respiration was accomplished chiefly by the abdominal muscles, and the morbid physical signs were those of double diaphragmatic pleurisy. There was ground for believing—and in point of fact, I did believe—that the cancer had produced inflammation in its neighbourhood which had extended the diaphragmatic peritoneum, diaphragm, and base of both pleuræ. I was not mistaken as to the existence of inflammation: the parts now named were the seat of inflammation: but its cause was not that which I had supposed.

I shall not recapitulate the different stages of the disease, which, however, I may remark, were very short. You know that the difficulty of breathing went on continually increasing; that palpation of the abdomen became more and more painful; that the patient frequently vomited the fluid, as well as the small quantities of solid

food which she took; and that at last she died, having had for twenty-four hours preceding death the signs of general peritonitis.

At the autopsy, there was found purulent peritonitis, with numerous adhesions matting together the intestines. The liver was greatly enlarged, and presented a marbled appearance: it was throughout the whole of its convex surface, adherent to the diaphragm: and by a part of its convex surface, it was intimately united to the anterior wall of the stomach. In the situation of the left lobe of the liver, there was a purulent pouch circumscribed by thick false membranes, evidently of old date: through a slight fissure in one of them, some pus had entered the peritoneum, and had there developed recent inflammation. There was, at the bottom of the purulent pouch, a circular perforation of the anterior wall of the stomach. When this organ was incised in the course of the small curvature, it was at once seen, not to be in a cancerous condition; and in a circular line around the pyloric ring, was observed a series of ulcerations, three of which were cicatrised, while a fourth, still in ulcerative activity, showed a perforation. One of the cicatrised ulcers was very regularly circular, another was oval: both were remarkable for the induration and callous thickening of their surroundings: the tissue of the cicatrix which formed this elevated surface, was fibrous, and resisted, but did not creak under, the scalpel like scirrhus, of which it had, moreover, neither the appearance nor the structure. The size of the perforating ulcer was about that of a two-franc piece. It had the form of a crater; the walls were somewhat thin, and at the point of perforation, there was destruction of all the coats of the stomach. The perforation resembled a lentil in form and diameter. It was situated in the neighbourhood of the sharp anterior border of the liver, so that the abdominal wall was glued to it by false membrane, which for a certain time had prevented the contents of the stomach from entering the peritoneal cavity. On the other hand, the adhesive inflammation extended round the transverse colon: and it was the arch of the colon enormously dilated, placed in the epigastric region, in front of the stomach, which formed the soft and tympanitic projecting tumour, mistaken during life for the stomach itself. The colon was, moreover, projecting between the two lobes of the liver in such a way that at the right side one could feel, through the abdominal parietes, the right lobe of the liver—at the epigastrium, the arch of the colon—and at the left side, the left lobe of the liver, which

might have been considered as an abnormal tumour, although there was a sonorous tympanitic space between the solid mass on the right (which was evidently the liver) and the indeterminate mass on the left. Now, from the nature of the gastric symptoms, it was very natural to infer that there was a cancerous tumour of the stomach. To conclude the description of the autopsy :—There was a diaphragmatic pleurisy, and adhesions closely uniting the base of the lungs to the pleura: there was no effusion : the inferior third of both lungs were congested and solidified.

I specially call your attention, Gentlemen, to the details of this case. First of all, it is very remarkable, that there should have been a succession of ulcers, and that the numerous ulcers should have been grouped exclusively at the pylorus by a sort of elective affinity. Then you see that this woman, who had had several years previously, and upon several different occasions, the signs of simple ulceration, presented numerous ulcerations. There had been periods of remission, and even of apparent cure; in fact, some of the ulcers were cicatrised. It was the most recent ulcer which determined the perforation, the cause of the peritonitis and pleurisy. Observe, that this case is an additional proof of what may be called the law of antagonism between the simultaneous existence in the stomach of round ulcer and cancer, like the law of antagonism between the successive presence in the uterus of fibrous and carcinomatous growths.

In this case, moreover, you find an example of *perforation* of the stomach, a symptom rather frequent, and often very formidable, in conjunction with simple ulceration. The perforation may give rise to a series of symptoms of which it is necessary that I should speak. First of all, peritonitis is a necessary result: it may be either partial or general, according to the rapidity with which the perforation takes place. When the destruction of all the coats of the stomach is accomplished slowly, adhesions have had time to form, between the perforated stomach and the neighbouring organs: usually, the pancreas, the left lobe of the liver, or the mesentery, compensates for the loss of substance, so that the matter contained in the stomach is prevented from flowing into the peritoneum. At other times, as in the case of our patient, the neighbouring organ is so disposed as not to supply completely the loss of substance, and consequently, peritonitis is produced, which in its turn, originates a new series of complications, such as diaphragmatic pleurisy. Finally, the perforation may have taken place with such rapidity as to allow

no time for the formation of adhesions, so that through the perforation of the stomach, a part of the contents of that organ will pass into the abdominal cavity; then, as you can easily understand, the neeessary eonsequence is, a very acute, and speedily fatal peritonitis. On the other hand, when solid adhesions attach the perforated stomaeh to the neighbouring organs (the liver or pancreas), one of two things may oecur:—there may be no alteration in the organ whieh furnishes to the stomach an adventitious wall, or at least a new fibro-cellular formation, whieh imparts thiekness to it:—or again (and the fact is much more curious) the ulcerative proeess continues and attacks the annexed organ, so that the ulcerative disease, primarily loealised in the stomach, extends by a mechanism, of which I cannot give a very good aeeount, to perfeetly different tissues, sueh as those of the liver and panereas. The adhesive inflammation in the neighbourhood has nothing in it to call forth our astonishment: the oecurrenee is very common. But that the inflammation, at first simply adhesive, should beeome ulcerative, in respect of the liver and the pancreas, as it had been in respect of the stomach, is, I confess, a very remarkable faet, affording an additional proof of the specifieity of morbid aetions, a speeifieity which is more related to the essenee of the disease than to the nature of the tissue whieh is attaeked. This is the fact, to whieh I have been desirous in a special manner to direct your attention. In contradistinction to certain cases in which the existenee of simple uleer of the stomaeh found at the autopsy, but not discovered during life by any special symptom, and which has not notably given rise to hemorrhages, even of a very slight kind, there are others in which blaek vomit and melæna of considerable extent are met with, independently of any appreeiable lesion of the stomach.

Six years ago, I was called in by my honourable friend Dr. Riembault, to a lady aged 65, living on the Quai des Célestins, and who, I was told, had vomited, and passed by stool, large quantities of blood. My first impression, produced by the pale yellow, eachectie eomplexion of the patient, was that she had cancer of the stomach: this was also the opinion of the professional brother by whom I was called in, and the look which we exchanged, when examining this lady, only told too eloquently, that we held in common the same opinion of her case, and had not a favourable impression as to her situation. The patient told us that she had been four days in Paris, where she had arrived in perfect health, never having experieneed, in

relation to her digestion, anything to attract attention. Her appetite was regular: she had never had pains, nausea, nor eructations, and she had been surprised by the vomiting of blood, which had occurred, without appreciable cause, on the day after her arrival in Paris. The previous history of the case scarcely agreed with the idea that there was a cancerous lesion; although there are cancers of the stomach which are completely indolent, and do not reveal any serious disturbance of the economy.

Completely reserving our diagnosis, my colleague and I placed ourselves in the position of persons who had to treat an essential hemorrhage: we prescribed preparations of iron and rhatany. Three days after my visit, the stools had ceased to be black, and there had been no more gastrorrhagia. Next month, the lady returned to the country. Her health became good; and five years afterwards, I learned that it continued excellent.

At the beginning of August, 1861, a man, 33 years of age, was admitted to our wards. At the very time of admission, he was seized with an attack of vomiting, and died suddenly. He had arrived in a state of profound prostration, unable to speak, and unable in any way to give information of his case. All that we knew, we derived from the persons who had carried him to the hospital on a stretcher, was that he had been long ill. The hospital attendants were struck with the yellow colour of his skin, and the great bulk of his belly.

The matters vomited, which were carefully preserved, were formed of blood altered by its admixture with the gastric juice: it was a liquid of sepia colour, with a deposit of solid matter finely granulated and resembling soot, of which a portion was suspended in the liquid. At the autopsy, the abdomen was found to contain peritoneal effusion, as if encysted. The stomach having been removed with the greatest possible care, was examined, and found to present no morbid change. Its cardiac and pelvic orifices were free, and there was no trace of cancerous tumour; upon the mucous surface, the colour was like the lees of wine. We did not discover the smallest ulceration. In the duodenum, there was no appreciable lesion. The lungs, heart, and brain were healthy.

The appearance and quality of the matters vomited in these cases, can leave no doubt in the mind as to their nature; and it is very evident also, that the hemorrhages had the stomach as a starting point. The progress of the symptoms, their happy termination,

in the first case, the results of necroscopic examination in the second, clearly showed that there was neither cancerous lesion nor ulceration of the stomach. The profuse sanguineous exudations came from the mucous membrane of the stomach, just as they come from the surface of other mucous membranes: this we sometimes see in the intestine, as in the following case, which I have many times had occasion to narrate to you.

A former functionary of our Faculty was seized, about seven years ago, with serious symptoms, all the details of which are worthy of being reported.

Though generally of very good health, he was subject to constipation of such a kind that he never went to stool more than once in ten or fifteen days; and then, he only passed a very small quantity of hard black matter like goat's dung.

One evening, without having previously experienced the slightest derangement in his habitually excellent health, without having committed the slightest excess at table, he suddenly felt an indescribable sensation of discomfort, and immediately afterwards fell down in a state of unconsciousness. For nearly twenty minutes, he remained in this state. He was taken home in a carriage; and after a good night, during which his sleep was tranquil, he, on the following day, resumed his usual duties. The occurrence now described took place on a Thursday: on the following Monday, when sitting in his office, he was again suddenly seized with symptoms precisely similar to those which characterised the attack he had had four days previously. On the following day, he twice experienced a recurrence of the same symptoms; but matters assumed a more serious appearance, for through extreme feebleness he was obliged to remain in bed. I saw him upon the Wednesday, during the afternoon. His complexion, generally good, was of such a decided cadaveric paleness, as at once to arrest my attention. Experience made me at once suspect the existence of intestinal hæmorrhage. I requested that his stools might be shown to me. I found, however, that he had neither had any alvine evacuation for eight days, nor had he had any vomiting. I immediately prescribed a purgative, the salts of Seignette, so far as I can recollect. The result was, the evacuation of an enormous quantity, estimated at five or six pounds, of black pitchy matter, resembling the tar used for ships. My diagnosis was thus confirmed: I had to do with a case of melæna.

The antecedents of this individual, the progress of the symptoms,

and the careful examination of the abdominal viscera by palpation, caused me to reject the idea of hæmorrhage depending upon a lesion of the stomach or intestines; and I comforted the family by assuring them that the malady was simple melæna. My prognosis was completely verified. For three months, it is true, the patient retained his anæmic colour; but, under the influence of rhatany, cinchona, and iron, he regained his usual colour, and his former good health: he has not had, up to this date, any recurrence of the symptoms.

Examples analogous to the case which I have now related are more common than is generally believed. Persons, when in good health, are suddenly seized with an undefined feeling of discomfort; they are observed to become pale and to fall down in a faint. One or two hours later, when they go to stool, their motions are as black as pitch, and this colour of the motions is retained for one or two days, after which it ceases. For some time afterwards, however, the patients suffer from debility, loss of appetite, slight gastralgia, buzzing in the ears, and paleness of the skin. The appetite and the strength return: convalescence is complete. The symptoms may nevertheless again occur at a period more or less distant; they recur in the same form, and are often not observed by patient or physician till a more profuse hæmorrhage suddenly produces prostration. This is a rare occurrence: usually, they are not observed till a complete cure has taken place.

When, in the course of your practice, you meet with patients who complain of passing blood by stool, or rather when they tell you that their stools are as black as tar, that is to say, presenting the characters of melæna, carefully interrogate them as to their antecedents—ask them, if they have never become suddenly pale, and continued so for a week or a fortnight; and ask them, also, whether these symptoms have not recurred several times. These phenomena will enable you to clear up your diagnosis, and to state that the patient has had intestinal hæmorrhage in his former attacks, as well as when he has noticed stools of a red, black, or bistre colour.

Let me now return to the consideration of simple ulcer of the stomach. The gastrorrhagia which usually accompanies it is, therefore, not a symptom of sufficient diagnostic value to enable the physician to pronounce definitively; for not only is it sometimes absent, but it may be present independently of any appreciable lesion, as in the cases I have just mentioned; as also, in the cases in which hæmatemesis is supplementary to habitual hæmorrhage, as, for example, in

some women suffering from disordered menstruation; in some patients affected with hæmorrhoids, in whom the menstrual flux is suppressed; and finally, also, it is a common phenomenon both in cancer and in simple ulcer.

It has been said, I admit, and the fact is one which clinical observation will enable you to verify, that vomiting of blood and black motions are to a certain extent more characteristic of simple ulcer, than of cancer of the stomach, inasmuch as they belong to all the stages of simple ulcer, of which, moreover, they frequently constitute the earliest symptoms. On the other hand, we see that in many cases of cancer, there is neither black vomiting nor black motions; and that when they do occur, it is generally at the last stage of the disease. It is also a clinical fact opposed to general opinion, that profuse hæmatemesis and suddenly prostrating melæna belong much more to simple ulcer than to cancer.

However precise this proposition may be when applied to the majority of cases, it is essential to recollect that the exceptions to the rule are sufficiently numerous to prevent its being regarded as an absolute sign that simple ulcer exists.

In cancer, hæmorrhage from the stomach or intestines sometimes supervenes, during a condition of apparently perfect health, as the first and only symptom of the disease which will inevitably carry off the patient.

A very near relation of my own, 60 years of age, when in full health and strength, was seized one day at table with syncope accompanied by slight convulsions, such as are commonly observed as a complication of loss of consciousness. I was present, at dinner, with my relation; Bretonneau, who was also present, believed that the seizure was an attack of epileptic vertigo. The state of syncope continued for a long time. The patient was put to bed: for a fortnight, he was very feeble, and deadly pale. I did not, any more than Bretonneau, suspect the nature of the case. A year later, the same person left home to visit one of his estates: all at once, whilst he was giving his orders to his managing servant, he fell down as if struck with a thunder-bolt. He was restored by sprinkling some drops of cold water upon his face: when restored to consciousness, he felt an imperative desire to go to stool, and passed a great quantity of blood. Immediately after this hæmorrhage, he became deadly pale, as on the occasion of his first seizure. We now clearly saw what had taken place the year previously. Bretonneau and I

then understood that upon both occasions there had been an intestinal hæmorrhage.

The patient got well; his health appeared to be perfectly re-established, when again, some months afterwards, he was seized for the third time with similar symptoms. He had risen early in the morning to speak to his work-people, when, feeling a desire to go to stool, he hastily returned to his room. Soon, his domestics hearing a great noise in the closet, ran to his assistance, and found him stretched upon the floor, vomiting blood in large quantity: the basin of the water-closet was filled with bloody matter, and his clothes were also soiled with similar discharge. After this event, he remained for a fortnight in bed, being unable to put his foot to the ground, so extreme was his debility. He, however, again regained his health; but from that time, he complained of lancinating pains in the epigastric region, where we discovered the existence of a tumour, of which we were able to follow the rapid progress. Soon, all the symptoms of cancer of the stomach were evident; and three years from the date of the first seizure, by which the beginning of the disease had been announced, my unfortunate relative died.

Six years ago, a man living in the environs of Paris frequently consulted me in reference to a frightful vomiting of blood, which he had had a few days previously. He told me that his appetite then was, and always had been, good: he never had had the slightest pain, nor the slightest uneasiness in his stomach. The hæmorrhage had supervened when he was in the most perfect health. He estimated at about a litre the quantity of black matter which he had vomited. This great loss of blood fully explained the anæmic paleness of his skin. Upon examining, I discovered in the region of his stomach an enormous tumour, occupying the great curvature, and quite painless on pressure. Notwithstanding this great lesion, the man had preserved perfect regularity in his digestive functions. I prescribed preparations of iron and rhatany, not certainly because I expected to cure his cancer, but to satisfy the inclination of restoring the economy, deeply disordered by the hæmorrhage of which he had informed me. Four months afterwards, he returned to consult me. He had regained flesh and a good colour. Nevertheless, the tumour was greatly augmented in volume. Six months later, another attack of hæmatemesis supervened, when I was again consulted; I again prescribed rhatany and iron, which once more produced a good effect. Soon afterwards, however, the usual

symptoms of cancer of the stomach were developed, colliquative diarrhœa set in, and the patient died.

The Vice-president of the Courts of Law in one of our most important towns, was seized during the year 1849 with vomiting of blood and great intestinal hæmorrhage, which brought him to within an inch of death. He speedily recovered, and was able to return from quarters in the country to which he had retired, to resume his magisterial duties. He came to Paris for medical advice: it was then ascertained that there existed an abdominal tumour occupying the anterior wall of the stomach. From this date, similar attacks occurred nearly every six months; and on each occasion there was a great loss of blood both by the mouth and the anus. There was, nevertheless, no disturbance in the digestive functions. The appetite was good: in fact, the patient was a hearty eater: he sometimes experienced acute gnawing pains in the stomach. He constantly complained of a state of great debility, which prevented him from taking much walking exercise, or going up stairs without being winded. I cannot say that he was fat, but he had preserved a certain amount of plumpness: his integuments generally were exceedingly pale, and his skin presented a slight straw-yellow colour.

I found that his mother had died from cancer of the breast. He himself was perfectly aware of his situation, and spoke constantly of his approaching end, fulfilling, however, at the same time, all his duties with exactitude.

In September, 1856, consequently seven years after the first attack, he went to spend the vacation at his estate in the country: some months previously, he had had hæmatemesis which, like all his previous attacks, was accompanied by melæna, and lasted for several days. All at once, without any appreciable exciting cause, or premonitory symptoms, he was seized one Sunday with enormous hæmorrhage from the mouth. The bleeding recurred on the following Tuesday, Thursday, and Saturday. On each occasion, the quantity of blood vomited was sufficient to fill a large basin; and also, on each occasion, there was an evacuation by stool of black matter resembling tar. The patient, exhausted by loss of blood, fell into a state of profound debility. He died during the day time of Sunday, 16th October, eight days after the frightful symptoms now described.

Although in the case now described, the evidence to be derived from *post-mortem* examination was wanting, there could be no doubt

as to the diagnosis. The tumour was perfectly appreciable to palpation; and its existence was ascertained by Dr. Gendrin, and my former *chef de clinique*, Dr. Blondeau.

You see, Gentlemen, from these examples, that stomachal or intestinal hæmorrhage, however profuse and however frequent, cannot, any more than gastric pain, be given as a positive sign of simple ulcer of the stomach. I may say the same of the vomiting of glairy matter, which is sometimes very profuse in persons affected with this disease.

This kind of vomiting is the result of irritation of the gastric mucous membrane in the vicinity of the ulcer, which irritation causes an increased secretion from the stomach. This symptom has still less diagnostic value in this affection than the other symptoms of which I have just spoken. In a very large number of cases of perfectly simple gastrodynia, increased gastric secretion is an ordinary symptom, it is likewise met with in some forms of chronic gastritis and dyspepsia, and is very frequent in hemicrania.

Neuralgia is often sufficient to excite the secretion of the stomach in excessive quantity; and then, the occurrence is analogous to that which takes place in other parts of the body under the influence of somewhat violent local pain. The statement of a case will be the best means of enabling you fully to grasp my views on this subject.

An individual takes masked intermittent fever, which declares itself in the form of suborbital neuralgia. At the beginning of the attack, the eye is perfectly free from injection and lachrymation. Pain begins: as it increases, the mucous membrane of the eye becomes injected, and sometimes the injection proceeds to such an extent as to be a real chemosis. For five or six hours, matters remain in this state: there is redness and swelling of the eye, with a profuse secretion of tears. The attack then passes off, the neuralgic pain abates, and the epiphenomena disappear, not returning till recalled by a new attack of the neuralgia.

In the same way, violent neuralgia of the stomach will suffice to excite profuse secretion of fluid by the stomach, which fluid will be ejected by vomiting. This copious secretion will also take place under the influence of any irritation of the stomach, be its nature what it may—in gastritis just as in gastralgia, in cancer as in simple ulcer; and consequently, glairy vomiting cannot be considered as diagnostic of the latter.

Though the presence of a tumour in the epigastric region excludes

the idea of a simple ulcer, and declares that there is a cancer, it does not follow that the absence of a tumour is a positive proof of the presence of an ulcer; for it is by no means rare that a cancer completely escapes detection from the peculiar position which it occupies.

The most important element in the differential diagnosis between the two affections, as Dr. Cruveilhier has shown, must be deduced from the progress of the disease. In simple ulceration, the alternations of better and worse are thus marked: improvement attends spare diet, and there is always an aggravation of the symptoms when this regimen is departed from. In cancer, on the other hand, the disease advances steadily towards a fatal termination, irrespective of regimen and of treatment.

My honorable colleague, Dr. Cruveilhier, in enunciating this proposition, implicitly admits that, so long as the disease lasts, the diagnosis is impossible—that is to say, so long as neither death nor recovery takes place: in the latter case, he concludes, of course, that the disease is simple ulcer. Here, however, the diagnosis may still be at fault; for, from the cases which I have brought under your notice, you have seen that there are sometimes, in cancer of the stomach, long intervals during which the disease shows no symptom, and during which, consequently, we may suppose that a cure has taken place.

Recall to your minds the magistrate whose case I related. For three years the only morbid phenomena which presented themselves were hæmatemesis and melæna, recurring at pretty distant intervals; and if examination of the epigastric region had not enabled us to detect the evident existence of a tumour, we might have more than once supposed that recovery was about to take place.

The final cessation of symptoms, and the complete restoration to perfect health, the less necessarily implies that the case is one of simple ulcer, inasmuch as I have seen non-ulcerous chronic gastritis sometimes accompanied by stomachic hæmorrhage and pain in the ensiform and dorsal regions. Such occurrences are rare, I admit; but as they do present themselves, they are quite sufficient to make us form our opinions with some reserve.

To sum up: profuse and repeated stomachal hæmorrhage, with or without accompanying melæna, violent gastralgic pains, apparently localised for the most part in the ensiform region, and in the corresponding region of the back, when coinciding with an entire absence of any

appreciable tumour in the epigastrium, justify us in supposing that there exists chronic simple ulcer of the stomach, particularly when the symptoms terminate in recovery. This is a general rule, but bear in mind that it is a rule which has numerous exceptions, and that, in the present state of science, the diagnosis of simple ulcer of the stomach is surrounded by much obscurity.

No doubt this obscurity is dispelled when, independently of the symptoms which I have just indicated, there appear other symptoms which essentially belong to cancer, symptoms which vary according to the seat of the disease.

When the cardiac end of the stomach is affected, you meet with phenomena similar to those which presented themselves in one of our patients in St. Agnes's ward, whom we were obliged to feed by the aid of an œsophageal tube. There is a form of dysphagia, characterised by regurgitation of the food, which at first seems to be easily swallowed, but which, in point of fact, only accumulates in the lower portion of the œsophagus. At the beginning of the disease, this regurgitation takes place immediately after deglutition, because the œsophagus then reacts much more powerfully upon its contents, as it has not yet become accustomed to distension. In proportion as it acquires this tolerance, the food is only rejected from the mouth at an interval more or less protracted after ingestion; but at first, individuals affected with cancer of the cardiac end of the stomach can only take liquid or semi-liquid aliment, and that only by swallowing it rapidly.

There is, however, a fact with which I must make you acquainted. You will see patients who have complained of having been subject for a longer or a shorter time to regurgitation of aliment, to such an extent as to be unable even to retain liquids, and who eat without difficulty, swallowing even bulky mouthfuls. You must not allow this apparent amelioration to impose upon you: it depends in some cases upon the tumour which obstructed the cardiac end of the stomach having become softened, thus allowing the passage into the stomach to be temporarily free from obstruction. In some days, however, this obstruction may be reproduced, by new cancerous growths forming around the opening.

If the lesion occupy the pylorus, there will generally be frequent but not profuse vomiting: it will occur less and less frequently, but will become more abundant.

You can understand, Gentlemen, the reason of these differences.

At first, the stomach rebels against the presence of alimentary matter, which, after having undergone chymification, ought to be propelled into the duodenum, the entrance of which is shut. At a later stage, the stomach becomes more tolerant, and accustoming itself to the contact of its contents, allows itself to become distended till the quantity of ingesta is greater than it can retain.

In cancer of the pylorus, there likewise exists great constipation, provided the cancer be not deeply ulcerated; in which case, while the vomiting becomes less frequent, there sets in a diarrhœa which soon becomes lienteric: the alimentary matter escapes through the permanently open pyloric orifice, before having been subjected to sufficient elaboration in the stomach.

In general, we can detect a cancerous tumour by palpation, a circumstance which facilitates the diagnosis of cancer of the pylorus. In exploring the region corresponding to the inferior orifice of the stomach, we find a more or less bulky tumour fixed in the situation which it occupies; while a cancerous tumour of the great curvature of the stomach will change its position as the stomach may or may not be distended. Mobility is also a sign of great value in detecting the existence of tumours of the liver, of which organ they follow the movements, rising and falling with the diaphragm in respiration.

Apart from the local characteristic phenomena of cancer of the stomach, there are others of equal importance.

Under the influence of great disturbance of digestion, a patient visibly loses flesh; his skin assumes a straw-yellow tint, which, I know, may also show itself in persons who have had profuse hæmorrhage, but which, in cancer of the stomach, will occur where there has been no loss of blood at all.

Cancer diffused over the mucous surface—that form which has been called *cancer en nappe*—much more frequently eludes our means of direct exploration. You recollect a woman, aged fifty-five, who was admitted to the Hôtel-Dieu in the beginning of September, 1861, and who presented extreme cachexia and emaciation, loss of appetite, pain in the abdomen, particularly in the right side, great flatulent distension of the stomach, ejection of gas and acid water by the mouth, vomiting of several months' duration, and diarrhœa. At a subsequent period, it was observed that the matter vomited was of a blackish colour, and deposited a sediment resembling soot. There was well-marked tympanitis, particularly upon the left side, occupy-

ing the hypochondrium and iliac fossa: there was also tympanitic distension of the hypogastric region; and on the right side, there was a sensible depression in the hypochondrium. It was supposed that this tympanitis arose from distension of the transverse and descending colon, and also of the sigmoid flexure.

The cachectic state of this woman, and the black matter which she vomited, scarcely left any room for doubt as to the diagnosis. Still, to make it certain, we were anxious to find a tumour in the region of the stomach; and, not having found any such tumour after having several times carefully examined the abdomen by palpation, I thought that meteorism of the large intestine caused an obstacle to investigation by palpation and percussion. By the end of September, the vomiting had become more frequent; the patient always had in her mouth a blackish acid fluid; she could no longer take food; and at last died without a struggle on the 29th of September.

At the autopsy, I found upon the face streaks of blackish matter issuing from the mouth; tympanitic distension of the belly in the same region in which it had been observed during life; and a sensible depression of the right hypochondrium, imparting to the abdominal parietes an anomalous appearance which arrested the attention of those present. The abdomen was opened carefully, when it was perceived, to the great amazement of everybody, that the special form of the abdomen depended upon a great gaseous distension of the stomach, which began in the cardiac region, occupied the right hypochondriac and the hypogastric regions, and terminated at the margin of the right iliac fossa. This distension, therefore, was vermicular, and had for its superior and inferior extremities the cardiac and cæcal regions. The whole of the small intestine had fallen into the pelvis: the large intestine retained its normal relations, excepting that the transverse portion of the colon had been a little dragged downwards by the great curvature of the stomach. There was no gas in the intestinal tube. The pyloric extremity of the stomach was in juxtaposition with the cæcum, and, in subsiding, had dragged down the upper portion of the duodenum. The liver, which was atrophied, had descended in front of the kidney. When the stomach was opened, it was found that its parietes had their natural consistence and thickness; it contained a large quantity of black liquid; and in the pyloric portion, the mucous membrane of the stomach was the seat of diffused cancer, which extended over a surface of four or five centimeters beyond the pylorus. The edges of the cancer were

denticulated, pale, like the remainder of the cancerous surface. The duodenum was intact: it contained a small quantity of blackish fluid.

The seat of the cancer, and its diffused character, accounted for the extreme distension of the stomach, and also for the difficulty—I may say the impossibility—of determining during life whether or not a tumour existed. In fact, it was necessary to take the pyloric end of the stomach between the fingers to ascertain that it was increased in bulk. There was no cancer in any other part of the body. The lungs showed cicatrices: and also tuberculous deposits in both summits. On the right side of the chest, there were cellular adhesions, the remains of an old attack of pleurisy.

When the cancer is beyond the reach of our ordinary means of investigation, as in the case I have just detailed, there is a valuable diagnostic sign which I shall now point out to you. The sign to which I refer is obliterative phlebitis [*phlébite oblitérante*], to which I directed the attention of pathologists fifteen years ago, being then, I believe, the first who had noticed it.

Should you, when in doubt as to the nature of an affection of the stomach, should you when hesitating between chronic gastritis, simple ulcer, and cancer, observe a vein become inflamed in the arm or leg, you may dispel your doubt, and pronounce in a positive manner that there is cancer.

One day, my lamented colleague and excellent friend, Dr. Legroux, showed me in his wards a very anæmic man of sixty years of age. He never had had hæmorrhage nor vomiting: he only complained of gastric symptoms, and his chief complaint was of loss of appetite. The patient presented exactly the appearance of a person with leucocythemia. Although neither the spleen nor liver was of abnormal size, I was disposed to adopt that diagnosis, when, upon uncovering the inferior extremities, I found that one of the legs was very œdematous, and that the posterior part of the calf of the same leg was the seat of acute pain. There was, in fact, well marked *phlegmasia alba dolens*. That was sufficient to inform me that the gastric symptoms depended upon cancer of the stomach, a view of the case which was confirmed some weeks later at the autopsy of the patient.

I have several times, in the wards, called your attention to similar facts; and have at the same time pointed out to you that obliterative phlebitis is not a symptom which belongs peculiarly to cancer of the

stomach, but that it is equally symptomatic of cancer of any other internal organ. I propose on some future day to return to this important point, when I shall have an opportunity of entering fully into the subject of *phlegmasia alba dolens*.

Before concluding this lecture, allow me to add a few words on the *treatment of simple ulcer of the stomach*. Regarding the treatment of cancer, of which I have incidentally spoken, I need scarcely tell you that we cannot arrest the disease, and can do no more than administer palliatives.

In simple cancer of the stomach, I usually institute the following plan of treatment. I order two or three grammes of trisnitrate of bismuth to be taken an hour, at the least, before meals, three times a day. It ought to be suspended in mucilaginous water, so as to be well spread over the surface of the stomach; but should the patient have a strong dislike to take the medicine in this form, it may be administered in an envelope of moist wafer-paper. My object in confiding the medicine to the empty stomach is to render its action more immediate, and consequently more efficacious. In this affection, bismuth, as well as other therapeutic agents of which I shall have to speak immediately, acts in the same way as if it were applied directly to a wound, or to the mucous membrane of the vagina, nose, mouth, or eyes, in the chronic inflammation of which it is a topical agent of great value. Bismuth, in point of fact, constitutes the basis of the treatment of simple ulcer. After having administered it for ten consecutive days, in the manner which I have described, I substitute for it pills of nitrate of silver, each pill containing one centigramme of that salt: the patient takes, for five consecutive days, three or four of these pills during the day, each pill being taken at least an hour before eating: I then, for ten days, resume the bismuth: after that, for four or five days, I give to the patient, before breakfast in the morning and at midday, a powder composed of one centigramme of calomel and fifty centigrammes of sugar. After this course of medication, I resume the bismuth and proceed with the other medicines in the order already detailed. Again and again, this routine is repeated for three or four months.

When cessation of pain, and a return of strength and appetite, lead me to conclude that the cure is complete, I suspend the treatment for a month. I then resume the same treatment for two consecutive months; then I suspend it for two months, and recommence it, continuing it during a month. I proceed in this way for

at least two years. It is by pursuing this patient plan that simple ulcer of the stomach is cured, and its recurrence prevented.

I need not tell you that ferruginous preparations must not be omitted when there is great anæmia caused by profuse hæmorrhage or imperfect nutrition.

To combat the violent pain I have recourse to opium, which I am always careful to administer in small doses at meal-times.

Hæmorrhages are treated by rhatany, sulphuric acid, and ice; when they have been arrested, and when the pain has been subdued, I prescribe bitters, such as the decoction of cinchona, infusion of quassia or of columba root; sometimes also certain medicines which combine bitter with slightly purgative properties, such as rhubarb. Finally, I administer the preparations of iron.

But the grand point in the treatment is the regulation of the diet, which ought not to be of an exclusive character, but specially adapted to the peculiarities of the patient's digestion.

Professor Cruveilhier says, while insisting upon the advantage of milk diet, that "the great problem to solve in the treatment of simple ulcer of the stomach is, to find an aliment which shall be borne by the stomach without producing pain, and, in relation to this point, the instinct of the patient is a surer guide than all the rules of art."

When the stomach becomes a little more tolerant, other kinds of food must be tried; for diversity of food is perhaps the most useful medication in the dyspepsia which accompanies ulcerous gastritis, as indeed it is in all other kinds of dyspepsia. I cannot too often repeat that the stomach likes variety; and, in opposition to the plan which I see followed by most of my professional brethren, I require that my patients make a meal of several dishes. I do not say that this can be carried out by sheer force, or at one bound; but it is a point which must be attained, and, moreover, it can be attained much more rapidly than is generally supposed.

LECTURE LXXI.

DIARRHŒA.

Classification according to Proximate Causes, that is to say, according to the Mechanism by which the Diarrhœa is produced.—Catarrhal Diarrhœa: this may be a Specific Affection.—Sudoral Diarrhœa [Diarrhée Sudorale.]—Nervous Diarrhœa.—Catarrhal Diarrhœa, in which the Affection is consecutive upon increased Secretion from the Digestive Canal or its Appendages.—Diarrhœa, resulting from Increased Tonicity.—Diarrhœa resulting from Indigestion.—Diarrhœa associated with Organic Disease.—This Classification is Artificial: the different kinds are blended with one another.

Gentlemen:—When the alvine excretions are abnormally fluid, frequent, and profuse—when they consist of an undigested or imperfectly digested alimentary residuum—when they consist of the products of secretion from the intestinal mucous membrane, from the pancreas, or from the liver—when they contain, or do not contain, blood or *débris* of mucous membrane—we say that there is diarrhœa. Of all the diseases which the physician meets with in practice, diarrhœa is undoubtedly the most common; it is also that which requires to be combated by the most varied measures. This diversity of remedies being necessitated by the multiplicity of causes, it is essential to know what these causes are before we can institute a rational mode of treatment.

With a view to facilitate the study of the subject which I have to bring before you to-day, I distinguish several kinds of diarrhœa. The division which I adopt is quite different from any of those which you will find in classic authors; but, without attempting to discuss the merit and the advantages of one or the other, I propose to lay before you my own views, because I thus understand the subject, and because, before everything else, I practice medicine upon prin-

ciples derived from my own experience, submitting them to your appreciation, and entirely delivering them over to the control of your judgment.

I consider that there are seven kinds of diarrhœa: one is catarrhal, or inflammatory diarrhœa; the second is sudoral diarrhœa; the third is caused by increased intestinal secretion from disturbance of innervation; the fourth is also a catarrhal form of diarrhœa, but it is a catarrh supervening consecutively on an excessive intestinal flux; the fifth is diarrhœa from excess of tonicity in the intestine; the sixth depends upon unsuitable aliment, or aliment bad in quality either absolutely or relatively; and, finally, the seventh is associated with different organic diseases.

The *catarrhal diarrhœa* is the most frequently observed form of the affection. All mucous membranes—the mucous membrane of the eye, the nose, the ear, the mouth, the pharynx, the larynx, the bronchial tubes, the uterus, the urethra, the bladder, the kidneys—are liable to inflammation. From the nature of the tissue attacked, the inflammation generally assumes a peculiar character, which constitutes catarrhal phlegmasia. The mucous membrane of the digestive canal is not any more protected from attacks of this character than the other mucous membranes, and perhaps it is even more subject to such attacks than they are.

Like every phlegmasia, catarrhal phlegmasia may be simple and genuine; but likewise, whatever may be its seat, it may be specific, and so form a certain number of species, each of which, bearing a certain relation to its origin, will run a special course, manifest symptoms peculiar to itself, and related to its specific cause.

These different kinds of diarrhœa do not resemble one another, but they do resemble themselves when they occur in different individuals. They differ essentially as to their symptoms, their duration, their degree of severity, and also as to the therapeutic measures required for their cure: this latter point is one of which you must never lose sight.

In catarrhal phlegmasia of the ocular mucous membrane, for example, along with those simple inflammatory affections occasioned by exposure to cold, or the introduction of a foreign body under the eyelid, you will have that epidemic catarrhal phlegmasia vulgularly called *cocotte*. You will have also purulent ophthalmia, blennorrhagic ophthalmia, and the like, which are very different in their symptoms and in their modes of termination.

In catarrhal inflammation of the mucous membrane of the nasal fossæ, besides simple coryza, you will have the coryza of measles, scarlatina, smallpox, glanders, scrofula, syphilis, &c.: no one will mistake these affections; for their characteristics are differential and distinctive.

We likewise have both simple and specific catarrhal inflammations of the intestinal canal: the intestinal inflammation, for example, is specific which accompanies measles, scarlatina, and the onset of confluent smallpox: it is also specific when related to the herpetic or other diathesis. I have already at some length directed your attention to these facts when lecturing on other subjects, particularly when discussing dyspepsia.

These inflammations, whether specific or non-specific, have characters in common, in addition to the characters which distinguish the one from the other. Some of these common characters belong inherently to the anatomical structure of the mucous tissue: I refer to flux, and increased discharge from the mucous membrane, the secretions from which are modified both as to quantity and quality. The others are subordinate to the seat of the inflammation, that is to say, to the organs affected: they are functional derangements, for in that way alone is an organ diseased—the function allotted to it is more or less disordered, and perhaps is entirely in abeyance. It is unnecessary to add, that the functional disturbance necessarily varies according to the particular organs implicated.

If it be the nasal mucous membrane which is inflamed, the sense of smell is enfeebled, perverted, or lost. If it be the bronchial mucous membrane, the disturbance is much more serious. The digestion of oxygen, if I may use that expression, being badly accomplished, hæmatosis takes place imperfectly, and according to the degree in which the catarrhal inflammation is more or less extensive, more or less deep-seated, or more or less persistent, the disorder of the function of hæmatosis may attain such a height as to induce cachexia. Should it be the mucous membrane of the intestinal canal which is implicated, digestion will be disturbed, and the nature of the disturbance will depend upon the portion of that passage which may be peculiarly affected. When inflammation attacks the stomach, its secretory apparatus immediately performs its functional office in an abnormal manner, and the gastric juice being no longer appropriate in quantity and quality, chymification is imperfectly accomplished. When the stomach, remaining healthy,

the intestines are affected, chylification will either be performed badly or not at all, in proportion to the degree in which the inflammation has disturbed the intestinal secretions.

But, whilst this increased secretion of gastric and intestinal fluids leads to a vitiated elaboration of the food, this badly elaborated food in its turn acts as a foreign body upon the mucous membrane of the digestive tube, augmenting the secretion and the profusion of the flux. It also irritates the muscular coat of the intestines, exciting its contractions in such a way as to render the peristaltic movements both more frequent and more rapid. This increased frequency and rapidity in the peristaltic movements, which is excited also by the presence of the excrementitious principles of the bile, which, as I have just said, is poured in large quantity into the duodenum—this increased frequency and rapidity in the peristaltic movements explains the increased frequency of the stools.

In diarrhœal catarrh, then, the flux consists of the residue of badly elaborated elementary matter, of humours secreted by the intestinal surface, and of secretions produced by sympathetic influences upon the great glandular organs of the digestive apparatus, the pancreas and liver.

As you know, Gentlemen, when the extremities of the different canals of a gland open upon an irritated mucous membrane, the irritation is propagated by sympathy to the gland, and its secretory functions are thereby often augmented. Simple irritation of the conjunctiva, passing by sympathy to the lachrymal gland, produces an abnormal flow of tears, the affection called epiphora. Excitation of the mucous membrane of the mouth, caused by chewing the root of anthemis pyrethrum, or any other sialogogue, will occasion profuse salivation, the result of sympathetic irritation of the salivary glands. So, in like manner, an inflammation or irritation of the mucous membrane of the duodenum will react upon the pancreas and liver, causing an increase in the pancreatic and hepatic secretions. In proportion to the degree of this sympathetic excitement of the liver, will be the greater or less amount of biliary matter in the diarrhœal discharges.

The cause, then, of the first kind of diarrhœa is an irritation or inflammation of the gastro-intestinal apparatus, a *gastro-enteritis*, or an *enteritis*, to use expressions which some physicians of the present day seem to have erased from their vocabulary.

Let me here repeat what I have said elsewhere. It is quite right

to impeach gastritis and gastro-enteritis, as understood by Broussais; but to deny the very existence of such affections is proceeding too far, is indeed proceeding to the opposite extreme of his error. I certainly do not believe that inflammations of the stomach and intestines occur so frequently as Broussais supposed, and still less do I believe that all the general symptoms which he attributed to them can be charged to their account. I do not see—as Broussais saw—gastro-enteritis in every disease; but neither do I see why the mucous membranes of the stomach and intestines should alone be exempt from attacks of inflammation. From the very nature of the functions which it has to perform, it is, I admit, more enduring, less sensitive, than other mucous membranes; nevertheless, that form of inflammation, that catarrhal inflammation, which, so to speak, only strikes the surface of the organ (whatever may be its cause) is in it not the less common. In fact, it is a much more common affection than is generally supposed.

I have now to speak of the second or *sudoral* form of *diarrhœa*. The details into which I entered regarding it, when lecturing upon the sudoral exanthemata were so full, that I might on the present occasion pass over the subject lightly, were I not anxious that you should clearly understand what I mean by the term sudoral diarrhœa, so as to grasp more thoroughly the different therapeutic indications which correspond to the different causes of the intestinal flux.

Such of you as have already had some practical experience in our art, particularly if your practice has been among children, must have observed the kind of diarrhœa to which I wish to call your attention. You must have seen persons in whom the influence of a slight increase of external temperature, arising, for example, from an excess of bedclothes, invariably produces more or less diarrhœal discharge. This observation has been made in respect of the lower animals as well as in respect of the human species: some horses, ere they have run half a league or a quarter of a league, have their skin covered with sweat, and, at the same time, have liquid alvine discharges. The diarrhœa and sweating are both phenomena of the same class, and arise from an abnormal secretion, the one from the internal and the other from the external integument, the result respectively of a fluxion to the secreting organs of the intestines and the skin.

There are other cases in which it seems as if all the emunctories

were scarcely adequate to disembarrass the blood of the excrementitious matter produced in it in excessive quantity: then there occurs as a physiological, that which we have seen as a pathological, phenomenon in measles and other eruptive fevers; or, as I have said, the exanthemic fluxion has taken place simultaneously from the skin, intestines, and bronchial tubes, manifesting itself by the characteristic eruption, diarrhœa, and bronchial catarrh which accompany the earliest of the pyrexial symptoms. The concurrence of profuse sweating and intestinal flux is likewise met with in the fever accompanying suppuration: in this case, the diarrhœa is explained by the irritation of the tegumentary membranes caused by the serous part of the pus being absorbed, and trying as it were to become eliminated by its natural emunctories: this is explained by the establishment of a sort of sympathy between the adventitious membranes of the suppuration and the mucous membranes.

If excessive sweating and intestinal flux show themselves simultaneously, the latter is in general only supplementary to the cutaneous secretion. Let me explain. You are acquainted with that sort of compensation which exists between the functions of the skin and mucous membranes—particularly the intestinal, bronchial, and urinary mucous membranes. You know that their secretions are destined, besides accomplishing other uses, to modify the composition of the blood by removing from it effete matters useless for the maintenance of life: there can be no change in either without a disturbance of their equilibrium: hence is it, that an increase or diminution in the action of one or other of these secreting organs will occasion a diminution or an increase in the action of the other. Nowhere is this antagonism of secretions so conspicuously manifested as between the skin and intestinal surface. You will now be able to understand why such a disturbance of the functions of the skin as prevents the secretion of sweat will often induce too profuse a secretion from the intestine. This is the explanation of attacks of diarrhœa supervening upon chills and suppressed perspiration.

Intestinal fluxes are sometimes so excessively copious as to lead to serious consequences. These are the fluxes which the older writers called *colliquative*, and of which a typical example has been furnished by the well-known circumstances which occurred to Morgagni. When travelling post on a fatiguing journey, he had a sudden attack of diarrhœa, and in twelve hours discharged from the bowels "at least sixteen pounds of nearly limpid water." This discharge, which was

accompanied by only slight pain, ceased after the vomiting of a greenish matter resembling a small leaf of cooked grass. Morgagni adds :—"On the following day, I realised the danger I had been in, when I looked at my body, but particularly when I saw my face and hands as flaccid as if I had emerged from a very severe long illness : I felt great dryness in the mouth and throat, disgust for food, and a sense of lassitude. The symptoms lasted only for two or three days, with the exception of the anorexia, which continued for a longer period."[1]

There is another form of sudoral diarrhœa, one which is rather frequently met with in women at the change of life. As you are aware, in the majority of women at that critical period, the approach of the final suppression of the catamenia is indicated by flushings of the head and of the skin of the whole body, accompanied by a profusion of hot sweat, before there is any irregularity in the flux. These inconvenient flushings and sweatings sometimes recur from twenty to forty times in a day. By and by, the menstrual periodicity becomes modified, and at last the flux entirely ceases : the hot flushings, or what women call the "*bouffées de chaleur*," then begin gradually to diminish, although they may continue for some months longer, and even, sometimes, for two or three years.

Now, in these women, it not unfrequently happens, that the hot flushings disappear for a time, being then replaced by a serous intestinal flux accompanied by borborygmi occurring in a strangely sudden manner, either in connection with, or independently of, mental emotion or errors in diet.

I have thought it well, for reasons which you can appreciate, to place this form of diarrhœa in the *sudoral* class, although, in reality, it ought rather to be classed with the forms of diarrhœa which I have called *nervous;* and of which I am now going to speak.

The influence of the nervous system on the secretions is a physiological fact so exceedingly well known, that I hardly require to recall it to your recollection.

The beautiful experiments of Claude Bernard upon the functions of the liver have shown us, that by pricking the floor of the fourth ventricle in a particular place glucosuria is produced, polyuria by

[1] Morgagni :—Recherches Anatomiques sur le Siège et les Causes des Maladies. Lettre XXXI.

pricking it in another situation, and albuminuria by pricking it in a third place.

These facts, so clearly elucidated by experiments on living animals, have been conclusively demonstrated by pathological observations: as you all know, neuralgic pain excites secretion in the glands near the affected parts, and toothache is often accompanied by excessive salivation, just as neuralgia of the fifth pair occasions lachrymation.

Similar effects are produced upon the secreting organs by the passions, by even moderate excitement, and by intellectual engrossment.

Pain, joy, a tender affecting sight, draw tears from the eyes. The mere idea or the recollection of a delicious dish, excites the salivary secretion; and, to use the popular expression, makes the mouth water. Mental disturbance, if somewhat intense, will cause a frequent desire to make water.

Similar mental influences are observed in the lower animals. Of the correctness of this statement, I require no better proof than that which is afforded by that wonderful phenomenon, the rush of milk to the mammary gland. It has been alleged, says Müller, that the mere sight of her colt will excite the lacteal secretion in a mare.[1] It is certain, that the manner in which cows are milked marvellously modifies the result of the operation—that a cow, milked by a gentle person, one who knows how to proceed, will give more milk than when operated upon by an individual who milks roughly. It must, however, be remembered, that, although the cow retains her milk when she dislikes the clumsy or coarse manipulation of the milker, there is also a special action, an excitation by the hand of the teats, which excites the secretion of milk, just as the soft agreeable sucking by the lips and tongue of the infant determines a rapid rush of milk to the nurse's breasts.

I have told you, when speaking of the convulsions of children, how much mental emotion, a fit of anger, fear, or cynic spasm, may modify the lacteal secretion in women. Let me here add, that, to constitute a good nurse, it is not merely necessary that the breasts should be well formed, with the skin marbled by numerous veins, indicating a copious circulation in the organs, but that the flow of milk, generally made known to the woman by a peculiar sensation,

[1] J. Müller:—Manuel de Physiologie, traduit de l' Allemand par Jourdan. [2nd ed. Paris, 1854.]

should take place with ease and rapidity: this rapid rush of milk is generally coincident with an easy erection of the nipple, an erection which is often of a voluptuous character.

The secreting apparatus of the mucous membrane of the digestive canal, and its afferent glands, the pancreas and liver, are no exceptions to this general law. And again, in relation to the influence of mental emotion, the effects of the first cannon-shot upon the raw soldier are universally known; and further, we see children seized with diarrhœa upon being threatened with chastisement, or when anything has frightened them.

Neuralgia in the region of the eye causes an increased flow of tears; and in the same way, a local pain propagates abnormal excitement to the secreting apparatus of the intestines: hepatalgia will induce an excessive flow of bile. Along with the increased secretion there will be, as in the example which I have just cited in relation to the influence of disturbed innervation upon the lacteal secretion, a morbid change in the composition of the product secreted.

Here, then, is an abnormal flux, having for its cause a peculiar modality impressed upon the nervous system, in fact, a nervous diarrhœa. The diarrhœa, thus originally excited, will be proportionately the more abundant that the afflux of fluids into the intestinal cavity produces indigestion, from a change of relation between the food which ought to be elaborated in its passage through the canal, and the juices which ought to accomplish this elaboration.

It was necessary, Gentlemen, that I should enter into these details, because nervous diarrhœa is one of the most frequent forms of the affection, and is at the same time one of those in which the physician can be most useful, when he knows how to recognise it.

In the *fourth species,* the diarrhœa is also catarrhal as in the first; but there is this essential distinction, that, while here the increase in the intestinal secretion is dependent upon irritation primarily developed in the intestinal mucous membrane, in the species of which we are now speaking, there is, on the contrary, a secretion which is at once excessive in quantity and vitiated in quality, which produces irritation, catarrhal inflammation of the intestines.

The morbid changes which occur in other organs under analogous conditions will enable you the better to understand my views. A coryza which lasts only for some hours produces in the upper lip, however little susceptible and delicate the skin of the individual may be, an irritation which, if the coryza last, will cause excoriation of

the parts. Observe, Gentlemen, that it is not only the flow of mucus more or less thick to which we must attribute the phenomena which I am pointing out; for you will see nothing similar supervene in children who are badly attended to and snotty (*morveux*), provided they are otherwise healthy. The mucus must have some peculiar properties; it must be the product of a morbid secretion, like that which accompanies the simplest catarrhal inflammation of the Schneiderian mucous membrane. The consecutive irritation developed in the skin may develope itself under the same influence in the pharynx: and I am convinced that many catarrhal sore throats have no other cause than the contact of irritating mucus which proceeds from the posterior orifice of the nasal fossæ affected by coryza.

In this case, the patients complain of feeling the mucus fall from the nose into the throat; and, in point of fact, if you look into the throat, you see that the posterior and upper wall of the pharynx is covered with stringy purulent mucus, which, after a certain time, by contact, produces catarrhal sore throat.

Does not a profuse flow of tears cause a somewhat similar effect upon the cheeks? Although this flux be in no degree inflammatory, there will be produced redness of the eyelids, occasioned much less by the contact of the tears, than by the individual constantly rubbing his eyes. But, should the lachrymation be dependent upon an ophthalmia, of however simple a character, the epiphora will ere long be accompanied by an irritation of the parts which are bathed in tears; you will see the skin become the seat of erythema or eczema, and a greater or less extent of excoriation will follow.

Uterine catarrh, which under certain circumstances may be compared to catarrhal inflammation of the nasal mucous membrane, will often be the starting point of ulceration of the neck of the womb. Nay, let me say, that in four fifths, or perhaps even in nine tenths of the cases, the excoriations have no other cause, and it is as superfluous to treat them as it is unnecessary to treat eczematous affections of the upper lip consecutive upon coryza. Both undergo spontaneous cure, when the catarrh in which they originate has ceased. Ulcerations of the cervix uteri are, moreover, not the only consequences of catarrhal inflammation of the womb. It is by no means unusual for irritation occasioned by leucorrhœal discharge to extend to the mucous membrane of the vagina, to the vulva, and even to a greater or less extent of the skin in the neighbourhood of the genital organs.

Let us apply these facts to the occurrences which take place in the digestive organs. Let us first of all recollect, irrespective of its cause, that which we see daily in young children suffering from diarrhœa. Do we not then see the skin of the nates and legs covered with an erythematous redness or eczematous eruption? Do we not frequently see, in such cases, more or less deep excoriations?

You certainly cannot have forgotten a fine child of nine months old, who was admitted to bed 16 of our nursery ward in November, 1861. There was visible, round her anus, an elevated ridge of mucous crusts, resembling syphilitic mucous crusts. Now there was nothing in this child to indicate constitutional syphilis: the mother was perfectly healthy, and the child herself had had nothing the matter with her till then, excepting a rather violent diarrhœa which had continued for twelve days. There had been, first of all, a little redness round the anus; then, the diarrhœa continuing, the skin became more inflamed, when she had local symptoms apparently of a very serious character. In two days, the diarrhœa was modified: then, by applications of a liniment containing glycerine and tris-nitrate of bismuth, these manifestations, apparently so threatening in character but really so little serious, disappeared.

Although we cannot positively assert what supervenes within the intestinal cavity in such a case, we may conclude that there is a similarity between the condition of the digestive mucous membrane and the condition of the parts which are visible. There is ground for believing, that a secretion, profuse in quantity and vicious in quality, whether proceeding from the stomach, duodenum, or upper part of the small intestine, or from the annexed glands, the liver and pancreas, will induce irritation of the mucous membrane of the ileum, cæcum, or large intestine, precisely in the same way that diarrhœal matter will produce irritation and excoriation of the skin in the neighbourhood of the anus and of the legs. This irritation, this consecutive inflammation of parts in the first instance not affected, will cause an excessive secretion in these same parts, which will show itself as an intestinal flux or diarrhœa.

Gentlemen, I have now to explain to you what I mean by *diarrhœa resulting from augmented tonicity*, that form of diarrhœa which constitutes the *fifth species* which I have named.

When a horse is killed, and the mass of intestines is removed from its still palpitating carcass, we see their contractions continue for eight or ten minutes: these contractions are sufficiently energetic in

the colon to cause the excrementitious matter to be propelled from the upper to the lower parts; so, in fact, as to accomplish defecation. In this way, we can witness upon the anatomical table exactly what takes place during life in the abdominal cavity. There occurs a series of movements separated by intervals of rest, movements influencing the whole length and breadth of the intestinal canal, but which, though they present great irregularity and apparent confusion, show a predominance of what is called the *peristaltic* motion alternating with that other motion which is called *anti-peristaltic*. The object and the result of these movements is, to mix more thoroughly, by a sort of churning process, the materials undergoing digestion, so as to enable them to undergo more intimate reactions, and to multiply their points of contact with the absorbing surfaces.

I do not require to say more regarding the phenomena which pertain to physiology: I would only add, that the slowness and the rapidity of the intestinal movements are proportionate, in the different species of animals, to the necessity for alimentation which varies with the species. I would also recall to your recollection that, in a normal state, these movements are performed more rapidly in the upper than in the lower part of the intestines—that they are more rapid in the ileum than in the large intestine—in the jejunum than in the ileum—in the duodenum than in the jejunum. But, however great their rapidity may be, it is proportionate, I repeat, to the necessity for alimentation, in such a way that the alimentary mass may have time to undergo, in each of the parts of the digestive canal, that elaboration with which each part is entrusted. When, for one reason or another, this rapidity is augmented, the elaboration is incomplete, digestion becomes disordered, and is performed badly or not at all; the food entrusted to the stomach ought to remain in it for a certain time before being converted into chyme, and passing into the duodenum, where it will be subjected to a new process. If the stomach, contracting too energetically, propel the imperfectly elaborated aliment into the intestine, the aliment will there act upon the organ, as an irritating foreign body, from the organ not being prepared to receive it in the conditions in which it is presented. The organ will rebel against it, and try to get rid of it as quickly as possible. The alimentary mass reaching the large intestine with part of its elements in this state, which, in a normal condition, would have been converted into chyle and absorbed, undergoes a process analo-

gous to that which we see when beef-tea or milk enemata are administered. It is, in fact, an error to believe that injections of this kind can be used in place of food. The large intestine is not made for the reception of alimentary substances, until they have been subjected to the previous treatment of digestion in the stomach and small intestines. The large intestine, far from assisting in their absorption, kicks against them (allow me the expression). Their presence excites energetic contractions, excites secretions, and, in a word, acts like a purgative.

Augmented tonicity of the stomach and intestines is a cause, then, of diarrhœa. Diarrhœa thus induced is lienteric; or, in other words, the stools contain a certain quantity of the food in the state in which it was eaten.

This augmented tonicity itself is, like the augmentation of secretion of which I have just been speaking, under the influence of the nervous system. When we come to speak of treatment, we shall see that this kind of diarrhœa yields generally in a remarkable manner to narcotic medication. Though the causes which bring into play this increased tonicity generally act directly upon the parts affected—though, to express my idea more exactly, we must seek for the starting point of that form of diarrhœa now under consideration in the stomach or in the small intestine, the starting point is also often found in the large intestine and in its lowest part.

In this lecture, I have already explained to you that irritation of the extremity of a canal is sufficient to cause irritation of the entire canal; and I have referred to what takes place in different secreting glands, to illustrate what occurs in respect of the liver in intestinal catarrh. Similar phenomena are observed consequent upon irritation of the lowest part of the large intestine. This irritation is transmitted by sympathy from the rectum to the colon, and from the colon to the small intestine. Does a day pass in which we do not meet with cases proving the truth of this statement? Is not this the explanation of the manner in which a lavement acts? Certainly, two hundred or three hundred grammes of water injected into the rectum, do not pass very far up the large intestine, but they are nevertheless sufficient not merely to cause it to contract, but likewise to induce contractions in the entire intestinal canal. An example of a very limited local irritation, propagated by sympathy to a great extent of surface, is afforded by intestinal contractions

and frequent stools being excited by the introduction of a simple suppository into the anus. This is the mode of action of hæmorrhoidal tumours, the presence of which will not only produce tenesmus, but also frequent diarrhœal stools.

You can now understand how such a lesion as ulceration of the rectum, or chronic inflammation, may cause obstinate diarrhœa, which will not yield till the treatment has been made to bear directly upon the local condition giving rise to it.

The *sixth species* of diarrhœa of which I have to speak, is *diarrhœa originating in indigestion.* It is not an unusual affection in adults, but it is more frequent in children, particularly in infants at the breast.

Although—as I have already said over and over again—the stomach is exceedingly tolerant of very coarse ingesta, its tolerance has limits; and sometimes, it rebels against its contents when they are excessive in quantity or unsuitable in quality.

Under such circumstances, the stomach will always endeavour to get rid of contents which incommode it. Substances which it has failed to elaborate, or which it has only imperfectly elaborated, will be rejected through one or other portal—through the cardiac or pyloric opening:—they will be vomited (perhaps the most fortunate alternative), or they will pass downwards into the duodenum. If they pass into the duodenum, they will excite abnormal secretions, and peristaltic movements, in virtue of the mechanism which I described when speaking of diarrhœa from excess of tonicity, the result being diarrhœa.

Excess in the quantity of food may lead to this result. To select one of the simplest possible examples: nothing is more usual than to see diarrhœa supervene in infants nursed by women whose milk is very abundant and rushes too quickly into the breasts. This disorder of the bowels, to use the common expression, neither arises from the food being of bad quality, nor from the stomach being in an unfit state for its reception, but from the food having been taken in too great quantity at one time. I have selected this illustration, because it gives me an opportunity of putting you on your guard against a mistake which is often committed. A child suckled by a woman having every appearance of being a good nurse has diarrhœa: the family, and sometimes the physician, are in haste to change the nurse, when nothing more is required than to order that the infant be not allowed to suck too long at one time.

Though diarrhœa from indigestion is less common in adults, it is also observed in them pretty frequently.

While in adults, as in children, it may depend on excessive alimentation—*diarrhœa ab ingluvie*—it may likewise depend on the bad quality of the food, and this bad quality may be either absolute or relative.

Every one knows what is meant by food absolutely bad in quality; but it is necessary to explain the meaning of the food being relatively bad. It is a fact generally admitted, that certain aliments and drinks which agree perfectly well with some persons are not borne by others; while the same persons who cannot bear these tolerate quite well the dietetic articles not supported by the other individuals. These stomachic antipathies are so essentially special to the individual, that it is impossible to lay down any rules on the subject; and it is only by personal experience we discover what will and what will not agree with the stomach.

In speaking of dyspepsia, I have already stated the practical conclusions to be deduced from these data: I called your attention to the unfortunate tendency which we all have to regulate the diet of our patients in accordance with our own tastes and digestive aptitudes. The importance of the subject justifies my recurring to it to-day.

I knew a man who suffered from diarrhœa for years, notwithstanding the trial of every sort of treatment, and whose general health was seriously impaired by the affection. The symptoms disappeared, as if by enchantment, upon the patient, of his own accord, discontinuing tea to breakfast, which for twelve years he had been in the habit of taking.

I attended the family of a ship-builder of Havre whose children were unable to tolerate milk for the first seven years of life. A succession of nurses was tried for all of them: lactation with the milk of the cow, the goat, and the ass, was also attempted: but all proved futile. A few mouthfuls of any kind of milk at once caused diarrhœa and vomiting. It became necessary to have recourse to farinaceous drinks, such as decoctions of grits and pearl barley: by this regimen, these children were reared as successfully as others fed in the usual way. This was certainly a very rare exceptional case; for, as a rule, diarrhœa supervenes in infants when a premature attempt is made to feed them with farinaceous food in place of milk, their natural aliment. When I come to speak to you on the subject of weaning,

I shall have to return to this point, and to treat it with all the fulness which it merits.

Here, I conclude my remarks on the different forms of diarrhœa, or rather upon the different modes in which they are produced. I intentionally omit speaking of diarrhœa caused by organic disease, reserving that subject for a special lecture, materials for which will be furnished by the cases of several of our patients affected with chronic diarrhœa. I shall merely add that all the forms which I have discussed are far from presenting themselves with the simplicity which I have assumed in my descriptions, for the purpose of enabling you the better to appreciate their causes: sometimes, they may present this simplicity, but in general, they have not that distinctiveness of character with which I have invested them. It is for the physician in each case to disentangle the predominating element as the symptoms evolve.

Gentlemen, all artificial divisions of disease are devoid of interest, if they lead to no therapeutic results. In establishing these divisions, my aim has been to simplify the treatment of diarrhœa, an affection the cure of which is too often attempted by one and the same routine of means, irrespective of the diversity of causes in which it originates.

In treating *catarrhal diarrhœa*, we must always bear in mind that the *catarrhal* element is the same in character as in ocular, nasal, bronchial, urethral, or intestinal catarrh; that it is impossible to predict its duration; and that here the *specific* element plays an important part. Simple coryza is an affair of a few days; but syphilitic coryza is essentially chronic. The pulmonary catarrh of measles is a transient affection, while the catarrh of influenza long and obstinately resists all our therapeutic efforts: an ordinary catarrh, though ceasing more quickly than the bronchial affection of influenza, has nevertheless a very uncertain duration.

So is it likewise with intestinal catarrh. Diarrhœa consequent upon a chill is, in ordinary circumstances, a very transient affection. The treatment is simply dietetic. All required is that the patient for a day or two be put on light food in the form of soups, so that the intestines, having little to do, may be allowed to rest; and thus the symptoms will spontaneously cease.

Cases, however, occur in which it is difficult to carry out this regimen. I refer to cases in which the catarrhal affection, apparently localised in a particular part of the intestinal canal—at the

end of the ileum or beginning of the large intestine—causes no loss of appetite, the stomach not being disturbed in the performance of its functions. The expectant system and low diet will certainly accomplish a cure, while ingestion of food will keep up, and may even increase the disorder.

Under these circumstances, nevertheless, it is proper to assist nature; and I do not know of any medication so decidedly calculated as the substitutive to accomplish this object: the best remedies, I mean, are *purgatives*. The selection of the purgatives to be employed is not a matter of indifference: those to which we ought to have recourse are the sulphate of soda, the sulphate of magnesia, and the salts of Seignette, which is the double tartrate of potash and soda. Patients affected with this kind of diarrhœa ought to take in the morning (fasting) from 25 to 40 grammes of one or other of these medicines: the result will be a temporary augmentation of the intestinal flux, but generally at the end of twenty-four hours the symptoms will have entirely ceased.

When the catarrhal inflammation has lasted a little longer, when it has acquired (if I may use the expression) a right of domicile, the substitutive medication is still indicated. If the stools show superabundance of bile, if, at the same time, the tongue is saburral and coated with a thick yellow fur, if there be loss of appetite and a feverish condition, emetics are specially indicated; and the emetic assuredly the most efficacious is ipecacuan, given according to the plan which I have already formulated to you.

The patient is allowed to rest the day after the emetic has been given, and then, on the following day, he takes a saline purgative. Emetics and purgatives are topical irritants, and act simply by substituting for the catarrhal inflammation another and a special inflammation which yields spontaneously much more quickly than that which preceded it. What takes place in the morbidly affected mucous membrane of the digestive canal is exactly what takes place when caustic collyria, nitrate of silver, sulphate of copper, sulphate of zinc, or acetate of lead, are employed in the treatment of catarrhal inflammation of the conjunctiva with a view to substitute for it an inflammation excited by the topical agents, and which will spontaneously cease.

Should the diarrhœa have lasted ten or fifteen days, the saline purgatives ought to be administered in another manner. On the first day, for an adult, I prescribe 25 grammes [6½ drachms] of

Glauber salts, and on the five, six, or seven following days I give 10 grammes [2½ drachms]: under this treatment, the patient will come to have not more than one or two diarrhœal stools in a day; and sometimes, even constipation supervenes. The treatment must then be stopped. To children, I prescribe the salts of Seignette, giving 5 or 6 grammes on the first day, and only three grammes on the following days.

The substitutive method is likewise available when the catarrhal inflammation has assumed a still more chronic form. The medicinal substances to be employed are, however, not those of which I have been speaking. Though, occasionally, saline purgatives are useful, mercurials are much more efficacious. I prescribe from five to ten centigrammes of calomel divided into eight or ten parts, one of which I order to be taken every hour for eight or ten consecutive hours. The same medication may be repeated daily, for not more than three or four days, care being taken to observe its action and avoid giving it up to the point of salivation; for when the gums become sore and swollen from calomel, a special form of diarrhœa sets in, in which the stools are of a greenish colour, and the flux much more obstinate than that which it is wished to subdue.

At the end of three or four days, it is time to stop this treatment. Sometimes, the symptoms are definitively subdued: the desired modification in the condition of the mucous membrane of the intestine is produced by the calomel, just as a modification of the state of the ocular and nasal mucous membranes, when catarrhally affected, is produced by mercurial topical applications. Generally, this treatment does not prove sufficient in itself; and to render the cure complete, it is necessary to give a neutral salt.

In place of calomel, you have not unfrequently seen me give *hydrargyrum cum cretâ*. To children—for whom I prefer this preparation—I give, for one, two or three days, twice a day, from five to fifteen centigrammes.

To adults, I give from 10 to 25 centigrammes of the English blue pill mass in the evening, following up this dose next morning by a saline purgative.

When the diarrhœa has resisted all other measures, you have more than once heard me prescribe a pill in which I combine calomel, opium, and ipecacuan. This is my formula:—

Ipecacuan	2 centigrammes.
Calomel	5 milligrammes.
Extract of Opium . . .	5 milligrammes.

To be made s.a. into one pill.

During the twenty-four hours, the patient takes, in the interval between meals, from one to three of these pills. This medication is continued for from five to ten days. If it be longer continued, the mercury almost invariably acts upon the mouth, a result which ought to be guarded against for reasons I have just stated.

I very frequently employ the crystallised nitrate of silver. It was long ago recommended by Boerhaave as a drastic purgative in dropsy; but I use it as a substitutive remedy in rebellious catarrhal diarrhœa. I make a pill containing in solution one centigramme of the lunar salt: this solution is dropped on a quantity of crumb of bread, tragacanth, or starch, sufficient to make a pill. From four to ten such pills may be given daily, during eight or ten days, as much as possible in the intervals between meals. Neither nausea nor any other disagreeable consequence results from the use of this remedy. In some cases, like saline purgatives, it temporarily increases the diarrhœal flux; but, as a rule, it promptly arrests the diarrhœa.

It is principally, however, for the treatment of chronic, tuberculous diarrhœa (regarding which I shall have to address you in a separate lecture), and for other forms of intestinal inflammation that the nitrate of silver administered both by the mouth and in lavement ought to be reserved.

Of all the remedies employed to cure somewhat obstinate catarrhal diarrhœa, the subnitrate of bismuth is that which I most frequently have recourse to: I generally give it along with prepared chalk, which is the precipitated carbonate of lime. This prescription proves useful, and never produces any bad effects. The powder which I usually order consists of equal parts of chalk and bismuth, from 4 to 10 grammes of each; but much larger doses may be given. One of my colleagues, Professor Monneret, administers it *larga manu*—in tablespoonfuls—without ever seeing the very slightest inconvenience result.

The English chalk mixture produces the same effects: it is composed of 30 grammes of prepared chalk, and 60 grammes of a weak infusion of mint leaves, aromatised by the addition of 30 grammes of orange flower syrup.

These preparations are often in themselves sufficient to cure

catarrhal diarrhœa; but it likewise often happens that they do not act beneficially, unless the intestinal inflammation has been previously modified by a purgative.

Some persons are seized with diarrhœa, whenever they are exposed to the slightest chill. Patients of this description derive a marvellous amount of benefit from *hydrotherapy*, and, when it can be had, from *maritime hydrotherapy*: this treatment tonifies their whole system, and enables them to resist variations of temperature, without contracting the intestinal catarrh from which, under similar circumstances, they were previously in the habit of suffering.

I was speaking to you about specific catarrhal affections: and at the beginning of this lecture, I told you, that the specific element showed itself quite as much in intestinal as in other catarrhs, I referred to the diarrhœa dependent upon the herpetic diathesis, as well as to certain forms of bronchitis and coryza. These diarrhœal affections occur, at longer or shorter intervals, in persons subject to cutaneous eruptions. Here, *sulphurous remedies* are exceedingly useful; and of them the best are the natural mineral waters, such as those of Luchon, and Aix in Savoy, but particularly the former.

Arsenical treatment will also prove of great service in these cases: to prove effective, however, it must be long continued. In employing this treatment, Gentlemen, I cannot too strongly urge you to formulate your own prescriptions, so as to be quite sure of what you are about. The arsenical solutions of Pearson and Fowler require to be administered with the utmost caution, for the slightest error may produce most serious symptoms. I prefer the following solution:

Arseniate of Soda .	5 centigrammes.
Water . .	125 grammes.

Each teaspoonful of this solution represents about 2 milligrammes of the arseniate. The dose may be increased up to one centigramme.

The patient takes this solution daily for a month, when it is suspended for 10 days, to be again resumed for another month; and I continue to repeat it, at similar intervals, for a long period: for do not forget the precept, that for chronic diseases (and as such we must regard all diathesic maladies) chronic treatment is requisite. A

combination of this arsenical medication with the sulphurous treatment generally cures the kind of diarrhœa of which I am now speaking.

The treatment of *sudoral diarrhœa* is naturally suggested by what I have said regarding the causes which excite increased intestinal flux. The preventive measures consist in not covering the body too warmly, and in abstaining from violent exercise after eating. When the affection actually exists, cool drinks and light food will generally suffice to accomplish a cure. That, therefore, is a subject into which it is unnecessary to enter at greater length.

The treatment of *nervous diarrhœa* is less simple, and requires that I should go into some details. In this affection, *obtunding and antispasmodic remedies* are peculiarly indicated. *Opium* takes the first place in this class of medicines: but it is a remarkable fact that almost equally high in the list is *belladonna*, which perhaps you will be surprised to hear me laud as a curative agent in diarrhœa, knowing, as you do, that along with the other physiological properties which it has in common with henbane and other medicinal *solaneæ*, it relaxes the bowels, and is consequently prescribed with advantage in some kinds of constipation. The contradiction which seems to exist between the opposite results obtained from the same remedy is only apparent, as you will easily perceive by reflecting upon the mode of action of belladonna.

In virtue of its obtunding powers, it is, according to the nature of the case in which it is given, either purgative or antidiarrhœic. When constipation depends upon a sort of spasm of the intestine, belladonna relieves the spasm, and so acts as a purgative: when diarrhœa of the form now under consideration depends upon exalted irritability and increased nervous sensibility of the intestine, belladonna soothes this irritability and calms this sensibility, in the same way that it arrests the lachrymal flux in supra-orbital neuralgia by calming the neuralgia which was its exciting cause.

In nervous, but only in that kind of diarrhœa, belladonna is of unquestionable utility: when the cause is a catarrhal phlegmasia this medicine aggravates the symptoms. It may often be very advantageously substituted for opium; but like it, it requires to be managed with extreme prudence, and only to be given internally in small doses, such as from one to three centigrammes in the twenty-four hours, and distributed in several pills: when the diarrhœa is accompanied by gastralgic and enteralgic pains, its use may be re-

stricted to frictions of the abdomen, particularly to frictions over the pit of the stomach.

For reasons similar to those now stated, antispasmodics are likewise admirable remedies in nervous diarrhœa. Of this class, *ether* is assuredly the most powerful agent; and it can be very conveniently administered in the now commonly used gelatinous capsules.

Nitrate of silver, which I mentioned as a useful remedy in catarrhal diarrhœa, is likewise useful in nervous diarrhœa, its action, however, in the latter, being that of an antispasmodic, and not that of a substitutor. This treatment (devised by Graves) requires to be directed with circumspection: it must not be continued for more than four or five days consecutively; and within the twenty-four hours, there must not be given more than four pills, each pill containing one centigramme of the salt. When combined with belladonna or opium, nitrate of silver has an exceedingly good alterative effect in those attacks of diarrhœa in which borborygmi supervene in nervous women and hypochondriacal men.

Although neuralgia of the abdominal viscera—gastralgia, enteralgia, and hepatalgia—are usually associated with obstinate constipation, it is not a very rare occurrence for them to occasion diarrhœa, the profusion of the flux being proportionate to the intensity of the pain. It is in such cases, that we interpose usefully by administering opium and antispasmodic remedies, the *modus operandi* of which we can explain. Benefit is also derived from the essential oil of turpentine, which is a very powerful remedy in a great many forms of neuralgia, although I cannot give you an account of the way in which it acts.

Here, too, opium must be administered with great circumspection; for if the doses are too large, the consequence is—if I may so express myself—an extinction of the aptitudes of the stomach, a stoppage, or at least an impediment to digestion—indigestion.

In administering the essential oil of turpentine, certain precautions likewise require to be observed. Above all, we must avoid the old practice of giving it in the form of emulsion; for so administered, it will irritate the upper and least tolerant parts of the digestive canal, the pharynx and œsophagus. The best, nay let me say the only proper mode of giving turpentine is in gelatine capsules, each capsule containing fifteen or twenty drops. When thus administered, patients can take from 100 to 150 drops a day, without experiencing

any inconvenience except eructations, which, however, are less frequent when the medicine is given in capsules, particularly if taken immediately before a meal. It is very unusual for turpentine to occasion vomiting.

To put a stop to, and also to prevent a recurrence of nervous diarrhœa, *hydrotherapy* and *maritime hydrotherapy* are beneficial, as in catarrhal diarrhœa; but my former remark must be remembered, that sea-baths are useful only when they are of short duration. It has often happened in my experience that patients who have during one season derived the benefit which I looked for from sea-bathing, have in the following year experienced no advantage from it, simply because they thought they might with impunity deviate from my prescription, to the effect, that they were to remain only a very short time in the water.

The treatment of the fourth kind of diarrhœa—that in which the intestinal catarrh is the result of an abnormal secretion from the digestive canal and its annexes—is at once that of original catarrhal diarrhœa and of nervous diarrhœa.

The inflammatory disturbance being more specially localised in the large intestine, it is necessary, independently of saline purgatives, to have recourse to topical treatment, acting directly upon the affected part. This topical medication consists in the administration of lavements.

We generally take up very erroneous notions as to the way in which lavements act. When, at the anatomical table, we measure the capacity of the large intestine, it seems as if it might quite well contain three or four litres of fluid between the anal orifice and the ileo-cæcal valve. This may be perfectly possible in the dead body, because by death, the intestine has entirely lost its contractility, but it is otherwise during life, the contractility existing. Dr. Briquet, my honourable colleague of the Hôpital de la Charité, has discovered, upon examining the bodies of persons who have died soon after taking lavements, that the 500 grammes of water of the lavement had gone as high as the cæcum, and had, in some cases in which force had been employed in injecting the liquid, entered the small intestine, having forced the ileo-cæcal valve. Dr. Briquet's observations show, that while lavements do not always ascend so high up in the intestinal canal, they generally do so; and the fact is important, inasmuch as it proves, that we may hope to be also able to introduce as high up in the canal the different topical agents by

which we may try to modify the state of the inflamed organ. The topical agents most suitable for the attainment of this object are the neutral salts: when the affection is obstinate, caustics, such as the nitrate of silver, and the sulphate of copper are indicated; and when the catarrhal affection is associated with the herpetic diathesis lavements containing from five to thirty centigrammes of the sulphide of potassium or sodium will prove of great benefit, by acting upon the mucous membrane of the intestine in the same way that sulphurous lotions act on the skin in herpetic affections.

The treatment of *diarrhœa arising from excess of tonicity* consists almost wholly in administering *opium*. There is no medicine from which good results can be more easily obtained; nor is any medicine more improperly employed. This arises from our impotence being concealed by opium giving temporary relief from pain, when it produces no curative effect on the malady. Herein lies an evil tendency against which we know not how to be on our guard: forgetful of the *quidquid meditetur et faciat, si natura non obtemperat naturæ non imperat*, the physician believes that the disease cannot baffle him: when he is unable to put an end to it, he tries to keep it quiet, though it be only for a very short time. In general, opium is the knout most willingly employed to stifle the manifestations of the disease. But beneath the compulsory quiet induced by the opium, the disease will continue, and will be all the more dangerous, that it is so masked by narcotism that its characteristic symptoms can with great difficulty be recognised. Alarmed at the symptoms which he has been the means of setting up, the practitioner completely abandons the use of a remedy which he had not the ability to use with moderation, and so loses the very great benefit which he might have derived from its judicious employment. Opium is the most powerful remedy we possess for the form of diarrhœa now under consideration; but to obtain success from it, we must know how to administer it. Given in small doses it does much good, and not the least harm. In my lectures on dyspepsia, I insisted at considerable length upon this point. I said that in some cases five centigrammes of the extract were often sufficient to produce the best results in affections of the digestive apparatus.

There is no medication in which it is of more importance to take into account, not only the idiosyncrasies of the patient, but also the exact time for administering the medicine. Recall to your recollection the two women who were patients in St. Bernard's ward in

whom a single drop of laudanum produced narcotism, not on one occasion only, but every time we renewed the treatment. In infants at the breast, half a drop taken in the twenty-four hours sometimes induces similar symptoms.

The economy is most tolerant of opium when it is administered immediately after or during meals—in this sense, that it is least apt to induce drowsiness when not received by an empty stomach.

Administer opium in small doses. One drop given to an adult, and one quarter of a drop to an infant, fifteen or twenty minutes before eating, will calm the state of erythysm of the digestive canal and prevent a diarrhœal flux, which, when it comes on two or three hours after taking food, proceeds from a morbid excess in the peristaltic movements.

It is only by opium that this kind of diarrhœa can be calmed and cured. In cases in which opium alone is insufficient, it will at least assist other medicines by allowing their presence to be tolerated so as to remain longer in contact with the intestines—medicines such as the subnitrate of bismuth, chalk, nitrate of silver, and calomel, which prove beneficial by their modifying action upon the mucous membrane.

When diarrhœa has as its starting point irritation localised in the lower portion of the large intestine, as is the case after a dysenteric attack, the treatment required is essentially topical. Lavements containing nitrate of silver, sulphate of copper, or better still, lavements consisting of a sort of hasty-pudding mixture of subnitrate of bismuth, prove of marvellous efficacy.

When the contractility of the parts renders them intolerant of these remedies, laudanum will intervene most beneficially in doses of from one to fifteen drops, according to the nature of the case; it will calm excessive irritability, and so allow the lavement to be retained.

I need not at present stop to discuss the diarrhœa which arises from indigestion. More interesting topics on which to address you are the diarrhœa of prematurely weaned infants, and the infantile cholera which so often accompanies premature weaning. Several such cases which we have had in our clinical wards I propose to make the subject of a special lecture.

Here, I stop to-day. At our next meeting, I shall address you on chronic diarrhœa, illustrating my remarks by cases at present in our wards.

CHRONIC DIARRHŒA.

Diarrhœa complicated with Fever and Nocturnal Sweats is almost always associated with Tubercle.—Chronic Syphilitic Diarrhœa.—Herpetic Diarrhœa.—Chronic Diarrhœa depending upon Simple Chronic Catarrh of the Intestine.—Chronic Diarrhœa, the result of Insufficiency of Food.—Treatment varies according to the Cause.—The Use of Raw Meat.

Gentlemen:—In bed 27 of St. Bernard's ward lies a woman who has suffered from diarrhœa for the last eight months. Every kind of treatment has been tried with a view to stop the intestinal flux; but it has never yet been checked for more than two days. When I saw the patient for the first time, she had very evident signs of peritonitis: the abdomen was hard and painful, giving everywhere on percussion a dull, or at least an obscure, sound. Some days before admission to the hospital, this woman had had acute bronchitis accompanied by intense fever.

The opinion I formed was that the diarrhœa depended upon chronic enteritis, complicated, as it often is, with chronic peritonitis. Upon inquiring into the previous history of the case, I ascertained that from the very first appearance of the symptoms, she had had night sweats, evening fever, and considerable wasting. I concluded that she was the subject of a tubercular abdominal affection.

I was not led to this conclusion by the obstinacy of the diarrhœa, but by the existence of nocturnal sweats and fever. The state of the respiratory organs did not present any significant indication, for although for some time past, there had been such an amount of cough as to arouse our fears, repeated and very careful examination by auscultation and percussion did not reveal the slightest pulmonary hepatisation. Mucous râles, characteristic of bronchitis, were heard disseminated throughout the whole chest.

It was, then, the coincidence of night sweats and fever with diarrhœa and peritonitis which led me to the conclusion that the patient was under the influence of the tuberculous diathesis. In forming my diagnosis, I was relying, so to speak, upon the long and valuable experience of Chomel. How often has my lamented predecessor repeated to crowded audiences in this place, that *chronic diarrhœa accompanied by fever and night sweats is an almost certain sign of*

tuberculisation, a proposition which I have had many opportunities of verifying in the course of my medical career.

An additional confirmation of the proposition is afforded by the case now before us: the patient has succumbed after languishing about six weeks in hospital. At the autopsy we found tubercular deposit on the surface of the peritoneum, and in the lymphatic glands of the mesentery. Tubercular matter was also found upon the pleuræ and in the bronchial glands; but, strange to say, no trace of tubercle existed in the parenchyma of the lungs. This then is an additional case to add to those exceedingly rare cases which constitute exceptions to the famous law formulated by Louis, to the effect that *whenever tubercle is found in one viscus, it will also be invariably found in the lungs.* Here, however, I must remark that this rule, though generally true in respect of adults, is not applicable to children. In them, it is exceedingly common to meet with tubercular lesions of the encephalon, abdomen, and even of the bronchial glands, without finding any in the lungs.

We have at present, in the same ward, in bed 28, another patient suffering from chronic diarrhœa. In her, the symptoms date back six months. From that time, she began to lose strength, and visibly to grow thin. Her breathing was oppressed; and she became winded on the least over-exertion: she had nocturnal sweats; and every morning (about seven o'clock) a paroxysm of fever, setting in with rigors. At the time of my visit, the fever still existed. I observed in this patient a peculiar formation of the fingers and finger-nails: the nails, particularly of the thumbs, were beginning to grow inwards. You are aware of the value which Hippocrates attached to this sign: in his second book *De Morbis*, he says:—"*Quum quis tabescit, ungues contrahuntur.*" I think that this patient is affected with chronic tuberculous diarrhœa. Although auscultation does not enable us to detect any sign of pulmonary disease, I am convinced that this woman is phthisical; and I certainly believe that, although we may not be able to find any thoracic lesions, there exist abdominal lesions similar to those detected in the other case of which I have just given you the history.

However decided my convictions as now stated were in this case, they have not caused me to lose courage: I have striven, and I shall still strive, to subdue the symptoms, hoping to moderate, should I fail to cure them.

My aim, first of all, has been to put an end to the quotidian

fever. In giving cinchona, however, I have been well aware that the paroxysms of fever were not those over which that wonderful medicine exercises an influence. I knew very well that the fevers which respond to the cinchona treatment are seldom quotidian and are generally diurnal—that intermittent night fevers being generally symptomatic resist antiperiodic remedies. I nevertheless tried the sulphate of quinine; and I gave it in high doses. This treatment did not modify the fever, which unfailingly returned every night notwithstanding scrupulous exactitude in administering the sulphate of quinine. But to my extreme surprise, the diarrhœa entirely stopped for more than a month.

The patient at the same time regained appetite, strength, and even a certain degree of plumpness. Digestion, nevertheless, remaining somewhat painful, slow, and laborious, accompanied, likewise, by weight in the stomach after eating, you saw me prescribe hydrochloric acid, after having in vain employed alcalies. This woman took daily, at the beginning of her breakfast and dinner, three drops of the acid according to the plan which I described to you when lecturing on dyspepsia. The digestion became easier in consequence of this treatment. Nevertheless, though her state is improved, my unfavourable opinion of her case remains unchanged, because the fever and night sweats continue. Sooner or later, this patient will sink from pulmonary phthisis.

In the bed next to that which she occupies—in bed 22—there died, a short time previously, a poor woman who also was exhausted by an obstinate diarrhœa of two years' duration. In this case, however, the intestinal flux had no relation to any such causes as those which existed in the other two patients. When she came into hospital, she was exceedingly emaciated, and so anæmic that the first question I addressed to her was an inquiry as to whether she had profuse uterine discharge. The extreme paleness of the integuments, and the bellows-murmur in the vessels warranted my suspicions. They were really, however, unfounded.

In this case, I set aside the idea of tuberculous diathesis, because fever and sweating were absent, and the state of the respiratory organs was good. The history obtained was sufficiently ample to enable me to explain the symptoms. The patient stated that two years ago she was living in Champagne, when she was obliged, by the pressure of poverty, to seek a home elsewhere. Accompanied by her husband and one child, the sole survivor of six, she came

to Paris to seek a subsistence. In this attempt she failed, and in place of obtaining the hoped for relief, she got involved in still deeper misery. Her husband fell ill: she, he, and the child had nothing to eat save the ration of bread allowed by public charity. This state of matters has continued for two years; and consequently, for the last two years, this poor creature has been wasting for lack of sufficient food.

The diarrhœa then, in her case, arose in the same way that we see it occur in animals allowed to die from inanition. It might be supposed that restorative diet, substantial alimentation, would have put an end to the symptoms. Unfortunately, the problem which had to be solved was not by any means so simple. A result had occurred such as that which happens in all similar circumstances. Deficient aliment had produced impoverishment of the blood. In its turn the impoverishment of the blood had caused alteration of the gastric, intestinal, hepatic, and pancreatic secretions, so that digestion was imperfect, even when the food was highly nutritive and of faultless quality.

We were evidently shut up within a vicious circle. It was necessary that we should feed the patient, but the food, however good it was, caused a succession of attacks of indigestion. Not only was the diarrhœa persistent, but taking the smallest quantity of food, caused vomiting. I tried to assist nature by sometimes giving hydrichloric acid, and at other times opium by itself, or in conjunction with astringents: I likewise administered ferruginous remedies and alcalies: in a word, I put in requisition many modes of treatment. My efforts, however, were unsuccessful: ere long, hectic fever was kindled, and the patient died.

At the autopsy, no appreciable organic lesions were found, except some small superficial erosions in the large intestine. The spleen, liver, and lungs presented nothing abnormal except a pale appearance.

Such of you as have been attending my hospital visits for some time past will remember the history of a young woman long resident in our wards, whose case—interesting for several reasons—has been recorded by Drs. L. Gros and Lancereaux.[1] I refer to the woman who latterly occupied bed 34 of St. Bernard's ward.

[1] Gros et Lancereaux:—Des Affections Nerveuses Syphilitiques. Paris, 1861.

I am not going to narrate the case in all its details. I will only remind you that the patient came into hospital for an obstinate diarrhœa which lasted thirteen months, was complicated with lientery, gastralgia, and vomiting; and which, after resisting many medicines, ultimately yielded to mercurial treatment. This woman's diarrhœa, the cause of which I was long in discovering, was the first, I may say the only manifestation of constitutional syphilis; and if we may believe the patient's statements, the venereal taint had not been indicated otherwise than by the appearance, two months previously, of a greenish vaginal discharge and acute pain in making water.

I was led at last to the correct view of the case by the patient suffering from pains in her head, notably aggravated at night, principally osteoscopic and seated in the course of the membranes; by her having tumours over both tibiæ, then over the right radius, and a little later over the left humerus; finally, a gumma [*gomme*], which ulcerated, on the calf of the right leg, placed beyond question the accuracy of the diagnosis.

The diarrhœa, I say, yielded to mercurial treatment. Van Swieten's liquor, which I first tried for twelve days, and other mercurials afterwards administered internally, were not supported: sublimate baths were consequently resorted to, and under their influence all the symptoms rapidly yielded. After a residence of twenty-three months, the patient went out completely cured.

I have been desirous, Gentlemen, to lay these facts before you in juxtaposition with each other, that I might once more show you how different, according to the nature of the case, is the diagnosis, prognosis, and treatment of a phenomenon the signification of which appears, when looked at by itself, to be identical.

It appears, then, that chronic diarrhœa, whether dependent upon intestinal catarrh, or on a more deeply-seated phlegmasia, may result from very different pathological conditions.

In the first two cases which I cited, the intestinal flux evidently proceeded from the tuberculous diathesis: the recurrence of the fever and nocturnal sweats every twenty-four hours, and their resistance of all treatment, led me to that conclusion. Unfortunately, in respect of the patient of bed 27, the autopsy confirmed the accuracy of my opinion. Though anatomical proof is wanting in respect of the patient of bed 23, the law laid down by Professor Chomel is of too general an application to permit us to hope that we have to do with an exception to it.

This is a point which you must constantly bear in mind. When—particularly in persons about the age of puberty—you have to treat a case of chronic diarrhœa complicated with fever and night sweats, be reserved in announcing your diagnosis. Do not expect to master the malady too easily; and if you succeed in moderating or modifying it, do not count on the amelioration being of very long duration. Beware of exciting in the relatives hopes in which you cannot participate. Generally, indeed I might say always, in such cases, there exists the tuberculous diathesis; sooner or later, it will explode, and the patients will succumb. Foreseeing the danger, you will not be exposed to annoying mistakes. When you have exhausted all the resources of your therapeutic arsenal, you will not be surprised at having failed to subdue a disease which from its nature is incurable.

The case of our patient of bed 34 is an example of the rare exceptions to Chomel's law which I have referred to as being occasionally met with. During the first period of this young woman's stay in hospital, I observed that she had an intermittent fever of quotidian type, which led me to think that the diarrhœa might be dependent on the tubercuious diathesis. Although I examined the chest daily with some care, I was unable to detect any sign of pulmonary solidification: and there was neither cough nor expectoration. The fever soon assumed a well-marked tertian type, a circumstance which was in itself sufficient to exclude the supposition that the tuberculous diathesis existed; symptoms which showed themselves at a later date dispelled all my doubts, and inspired the hope that we should soon cure a diarrhœa which was symptomatic of a malady usually very amenable to treatment. Mercurials fulfilled the therapeutic indication, just as sulphurous and arsenical preparations would have fulfilled it had the intestinal flux been dependent upon a herpetic diathesis.

The chronic diarrhœa with which the patient of bed 23 was tormented being independent of diathesis, we should have been justified in hoping for recovery, had not the symptoms dated back two years, and had we not had to do with an utterly broken down constitution which made no response to any dietetic or medicinal treatment which was tried. The unfortunate woman, from the long period which her alimentation had been insufficient, was exactly in the position of an animal perishing from inanition. The blood being deprived of the materials required for its renovation, the intestinal secretions were

vitiated, and the digestive functions exhausted, so that we could not count on treatment which, under apparently similar circumstances, is unquestionably useful—that is to say, in chronic diarrhœa unconnected with organic lesion, such for instance as occurs in the convalescence from serious and protracted maladies. The treatment to which I refer consists in *nourishing the patients with minced raw meat.* When I come to treat of the diarrhœa of infants at the period of weaning, I shall revert more in detail to this plan of treatment, which may appear strange to such of you as have not seen me employ it.

Fifteen or twenty years ago, I was summoned to a lady of 23 or 24 years of age who had been suffering for six months from an intractable diarrhœa. I was one of four physicians called to this consultation. After a careful examination of the patient, and a most minute inquiry into all the circumstances, we entered upon our deliberations. I cannot now recall the conditions under which the diarrhœa had supervened: I only recollect that from the long continuance of the diarrhœa, we suspected the existence of the tuberculous diathesis. However, the general aspect of the patient, her antecedents, the absence of fever and of all symptoms characteristic of phthisis, caused us to reject the tuberculous hypothesis, and to consider the diarrhœa as a local affection, the result of chronic irritation of the intestinal mucous membrane. All the methods of treatment usually adopted in similar cases had been tried; and they had all completely failed. When each of my brethren had stated the treatment which he recommended, I gave my opinion as to the plan which ought to be adopted. I stated that the resources of pharmacy had been exhausted, that not only could no good be obtained from the farther trial of drugs, but that I looked on pharmaceutical intervention as mischievous. It would, therefore, I argued, be necessary to rely entirely upon dietetic treatment. My brethren replied that regimen had been tried in every form, without the least impression having been made on the disease, that the patient had a great disgust for every kind of food, and that every kind of aliment was at once rejected by the stomach. I then proposed the use of *raw meat.* My proposal was received with sceptical derision; but I was not dismayed, and maintaining my opinion, supported by a case in which the raw meat system had proved wonderfully successful, I begged that it might be tried. The ordinary physician of the family, though equally sceptical with the other two as to the attainment of that success which I hoped for, consented to make the experiment. It

then became necessary to induce the patient to accept the proposed treatment; and this, it was thought, might not be easily accomplished.

Are not the individuals few in number who would at once take to such a diet, though in point of fact the repugnance to it is nothing more than the result of habit? Consider the question, and ask wherein lies the difference between cooked meat and raw meat? Be that difference what it may, it is the result of habit; and we all know that habit is a second nature difficult to change.

I went to our patient and asked her whether she would have any objection to eat the under side of sirloin of beef "*under done*" [*filet de bœuf peu cuit*]. She replied that she would willingly take it. I then gave my instructions to the cook, telling her to place the meat before a very strong fire for a few minutes, just long enough for the outer layer to be acted on by the heat, the interior remaining absolutely raw. Farther, I directed that before serving the meat so treated, its most cooked part should be removed, the remainder only being minced for the patient's use. All this was done in accordance with my directions; and on the first day, the lady ate and perfectly digested two slices of raw meat. Next day, she ate three slices: she then took four slices, and at last took a tolerably large daily portion. In less than two weeks, the diarrhœa had ceased, and complete re-establishment of health had taken place. The great advantage of this treatment consists in its at once reconstituting the mass of the blood, so fitting it to fulfil all its functions. In this case, there was no relapse. My stratagem succeeded to the utmost of my wishes.

When this stratagem fails me, there is another to which I am in the habit of having recourse. I give the raw meat under the name of "*conserve de Damas.*"[1] Why this name? I confess that I should be greatly puzzled were I to try to answer the question. In fact, I adopted the name which first suggested itself. The *conserve de Damas* is simply raw meat reduced to a pulp, and mixed with currant jelly or conserve of roses. When I prescribe it, I take care to give notice to the apothecary of what I intend him to give. You can quite understand that remedies of this description can hardly be introduced into the pharmacopœia. An uninitiated person never recognises raw meat in this disguised form, and therefore generally takes it without the least repugnance.

[1] Reveil:—Formulaire Raisonné des Médicaments Nouveaux, et des Médications Nouvelles. 2nd edition, p. 69. Paris, 1865.

It seems extraordinary that stomachs and intestines incapable of bearing or digesting even the lightest kinds of food should so soon become accustomed to aliment of so strong a description. Bear in mind what I said in relation to this point when I was lecturing on dyspepsia.

When a patient complains of disordered digestion, our first idea is to put him on a diet easy of digestion. In certain cases, how can this be done? Food easily digested by some patients is not easily digested by others for whom it is prescribed; and the conclusion naturally arrived at is, that a diet still more rigidly plain must be tried. The patient, however, grows weaker, his dyspepsia increases, and his diarrhœa continues: all the consequences of inanition supervene, the blood becomes impoverished, the secretions of the digestive organs become altered; and to avoid one evil, a greater evil is fallen into.

Ten years ago, a very busy and very skilful Parisian physician—a great worker—became dyspeptic. In consequence of a chill, he was attacked with gastric symptoms, which, in the first instance, he successfully combated by restricting his diet. Whenever he resumed his usual regimen, he felt pains which made him return to more moderate fare: he was satisfied to live on beef tea and diluted milk. Under this system of feeding, he soon fell into a state of great debility; fever lighted up, and vomiting supervened. He consulted Chomel, who suspected cancer of the stomach, without discovering, however, any material signs of this disease. Chomel advised the patient to continue the regimen which he had adopted. I was next consulted: I concurred in Chomel's view of the case, though as unable as he had been to discover any distinctive signs of cancer. However, upon obtaining additional information regarding the previous history of the case, it appeared to me that there was some ground for attributing the symptoms to inanition; and I therefore recommended more substantial nutriment. I urged my suffering brother to take a basin of meat soup: this he did in obedience to my wishes, but as he felt the pains more severe on the following day, he lost heart, and resigned himself to die. I endeavoured to give him hope, and at the same time urged him to pursue the dietetic course which I had recommended. "You have," said I, "the melancholy conviction that you are a hopelessly doomed man: very well, then, having realised the worst, confide your case to me, and let me do what I please. As a favour to me, I ask you

to eat, from this day, the wing of a partridge very slightly cooked." He granted my prayer, without however counting on obtaining the benefit which I promised him from his compliance. To his great astonishment, three hours after his repast, digestion was accomplished, and he felt revived; next day, he took double the quantity of aliment, eating two wings of partridge. On the following day, he felt a return of strength. He now became hopeful of recovery, rejecting the idea of cancer, and taking the same view of his disease as I took.

He was soon quite well, and he has ever since remained well. My honourable brother is now in the enjoyment of the same excellent health which he used to enjoy, and he pursues his professional avocations with very great talent and admirable devotion.

Gentlemen, this case shows you that it is frequently impossible to know *à priori* the food which will agree best with a patient. Many persons will digest pork and ham whose stomachs cannot bear a light panada. Do not interrogate me as to the wherefore of these singular diversities, for I know nothing about idiosyncrasies and special aptitudes of digestion. The physician cannot lay down for himself fixed rules whereby to regulate his dietetic prescriptions: he must feel his way by experimental trials, which will occasion neither danger nor inconvenience if judiciously directed.

It is important not to forget the necessity of varying the nature of the alimentation. When a patient continues for more than five or six days to live upon the same kind of food, he is apt to loathe it: his stomach is wearied with it, and the symptoms reappear. It is then supposed that the treatment instituted is unsuitable, whereupon the new direction is abandoned, and the patient is allowed to fall into the old rut whence he had emerged.

Again I repeat, that I have obtained real service in certain forms of apyretic chronic diarrhœa from giving minced raw meat. Alone, I have often found it sufficient to accomplish a cure; but frequently, it has also been necessary concurrently to have recourse to agents of the materia medica. Occasionally, under certain circumstances, it is necessary to give very small doses of laudanum before meals: occasionally also, alcalies are useful, and at other times, bitters or tonics are of service. Nux vomica and its substitutes take the first place as tonic remedies in many cases. There are other such cases, again, in which ferruginous medicines are indicated; as, for example, when the diarrhœa is complicated with great anæmia—whether this

be produced by the profuse intestinal flux, or by an impoverished state of the blood, and consequent debility, as is frequently the case in young subjects.

In this class of cases, in addition to the characteristic paleness of the integuments, and the great emaciation which accompany the diarrhœa, there sometimes occur sanguineous exudations into the subcutaneous cellular tissue, and there are seen, more or less disseminated over the body, ecchymotic spots. Another very common symptom is œdema of the lower extremities, and even a state of pretty general anasarca; but these dropsical symptoms are unaccompanied by albuminuria.

Cinchona, bitters, and in a special manner ferruginous medicines will powerfully aid a tonic regimen. When iron cannot be borne internally—a not unusual occurrence—prescribe ferruginous baths, each bath containing 500 grammes of the sulphate of iron.

In obstinate chronic diarrhœa, you will also find hydrotherapy and certain natural mineral waters very useful: you will likewise obtain specially beneficial results from sea-bathing and maritime hydrotherapy.

I must not conclude my remarks on chronic diarrhœa without saying two words upon the good effects of saline purgatives. How often, for example, have you seen me persist with a sort of obstinacy in the use of Glauber salts. Gentlemen, this is a very important method of treatment. I begin by giving not more than 10 grammes of the salt dissolved in a very small quantity of water, and I recommend the patients not to drink for some time after taking the medicine. On the following day, I do not administer more than 5 grammes; and on each succeeding day, for a fortnight, I repeat this dose. If (as is usually the case) the diarrhœa cease, I only give the remedy once in two days, always selecting as the time of administration, the morning before taking food. Should the patients feel great repugnance to the medicine dissolved in water, it may be given enclosed in wafer paper.

Rhubarb in very small doses—say from 10 to 15 centigrammes—administered in the morning before taking food, is sometimes exceedingly useful.

Lastly, let me recommend to you a combination of remedies which you often see me prescribe in the wards. I prescribe pills, in each of which there are two centigrammes of ipecacuan, half a centigramme of calomel, and half a centigramme of extract of opium: one of

these pills is taken morning and evening for five days. I then return to the saline purgatives or rhubarb : and afterwards, I again resume the pills of ipecacuan, calomel, and opium. For two or three months, I pursue this routine of treatment, interrupting it, however, occasionally, and always paying great attention to the regimen of the patients.

LECTURE LXXII.

INFANTILE CHOLERA:—DIARRHŒA OF CHILDREN.

Infantile Cholera is different from Asiatic Cholera-Morbus.—Conditions under which it is developed: influence of Season.—Particularly occurs at the period of Weaning.—Symptoms.—Prognosis.—Treatment.—Diarrhœa of Weaning Infants treated by Raw Meat.

Gentlemen:—Some days ago, when we were getting into the very hot weather, I said that most probably we should not be long without seeing cases of the disease which in France is called "*choléra infantile*," and which American physicians have described under the name of "*summer disease*." My anticipations have been only too completely realised. The day before yesterday, a child who occupied bed 13 of our Nursery ward died, after having suffered for a short time from this disease.

I accept the name "*choléra infantile*" because its use has been ratified by long custom, and because I am opposed to the introduction of new names, when the old ones are familiar and well understood. Were it not for these reasons, I should prefer to call the disease by its American name, because I think it is much more appropriate.

Infantile cholera is essentially different from cholera-morbus, though the latter does not spare very young children.

The influence of season, which in America has given this affection the name of the "summer disease," would appear to be its principal cause, irrespective of that which belongs to the individual. From the earliest ages, this disease has been observed: during the hot season, it appears every year in every country.

Cholera-morbus, which did not make its appearance in Europe till less than fifty years ago, only returns at certain epochs, and its advent is irrespective of season: while it ravages numerous localities it does so, not simultaneously but in succession like epidemics, its

cause being as yet unknown. In these respects, the two diseases present fundamental distinctions; and they do not the less differ from one another in respect of the symptoms by which they are respectively characterised.

Asiatic cholera-morbus, both in children and in adults, has special features, which we all know how to distinguish from those of cholera *nostras*.[1] The two kinds of cholera, no doubt, have some symptoms in common, which, if considered separately, might lead us into confusion; but there is something specially distinctive in the aspect of the patient, in the appearance of the tissues, in the changes which take place in the temperature of the skin, in the aggregate of the general phenomena, and in the respective course and gravity of the symptoms.

The same sort of comparison may be instituted between these two diseases which may be made between many others. In the same sort of way, we might compare influenza with bronchitis or simple catarrh; and dysentery with acute colitis. Amid the similarities which these affections present, they show dissimilarities still greater, so that it is impossible to confound them with each other. The points of dissimilarity are so well marked, so clearly defined, that they evidently bear the stamp of specificity.

To follow out the same illustrations which I have already used—simple bronchitis is, at least generally, a mild and transient affection, but when this bronchitis, the result of a cause which we cannot detect, prevails as an epidemic, that is to say, when it is influenza, it assumes an entirely different character in respect of severity and inveteracy. Who does not know, that under these circumstances the intensity of the evil, the high fever, the pains in the back and chest, the general feelings of discomfort and prostration, in a word, all the general symptoms consequent upon an attack of influenza, bear only a slight resemblance to those observed in bronchitis, even in an attack of the most violent character?

Similar remarks are applicable to acute sporadic colitis, and epidemic colitis which takes the name of dysentery. In both, the large intestine is the seat of the characteristic lesion: in both, the stools are composed of bloody, glairy secretions. In sporadic colitis, however,

[1] See the Article on CHOLÉRA ASIATIQUE, by Desnos—Article on CHOLÉRA NOSTRAS, by Gombault—and Article on CHOLERA INFANTILE, by P. Loraiu:—in 7th volume of *Nouveau Dictionnaire de Medicine et de Chirurgie Pratiques*, published at Paris in 1867.

the intestinal disturbance is transient, the accompanying pain and tenesmus are slight, and the fever is moderate: notwithstanding the local symptoms, the general state of the economy is good. In dysentery, while the severity of the local inflammation, generally so intense as to produce some amount of mortification, may to a certain extent account for the severity of the general symptoms, it is, on the other hand, not uncommon for the symptoms to assume a character more formidable than those of acute sporadic colitis, even when the local lesions are insufficient to explain the profound disturbance of the whole system.

In a word, if influenza and dysentery are inflammatory diseases, they are inflammations nosologically the same—the one belonging to the genus bronchitis, and the other to the genus colitis; but this epidemic bronchitis differs as much from whooping-cough, and this epidemic colitis differs as much from common catarrh of the large intestine, as the natural history of one animal or vegetable species differs from another animal or vegetable species of the same genus.

When we read the description left us by Sydenham of cholera as observed by him, and as we find it described by authors who wrote at the beginning of this century, bearing in mind at the same time the symptoms presented by epidemic cholera in 1832, we at once perceive the greatness of the difference between the cholera described by Sydenham and the Asiatic cholera-morbus which ravaged Paris in the year just named, which same disease has since reappeared here at several subsequent epochs, and has also desolated many departments of France and many foreign countries. Having already sketched in a few words, the great differential features of these two diseases, I now proceed to consider the subject more immediately before us—infantile cholera.

It is when infants are being weaned, that they are most liable to this disease. Not a day passes in which I do not call your attention to this important fact at the bed side of patients in our Nursery ward: I am constantly telling you, that it is whilst infants are being weaned that they are most exposed to serious disorders of the alimentary canal. During the period of lactation, so long as they live upon the natural aliment supplied by the nurse, there is seldom much reason to fear such affections; but should the weaning be badly managed—even if the infants are as old as fourteen, fifteen, or sixteen months—should they be suddenly deprived of the maternal milk, without the observance of certain rules (which I shall point out to

you), indigestion will be caused and maintained, which will lead to diarrhœa, and this diarrhœa again, under certain circumstances, will become the starting point of infantile cholera.

The disease usually manifests itself suddenly, and is announced by symptoms of which I shall now give you a rapid sketch.

The physiognomy of the child rapidly changes. On looking at him, you are at once struck with the very sunken appearance of the eyes, and with a bluish line encircling the lower eyelids. You hear the child uttering incessant cries, often as if being suffocated; for (as in Asiatic cholera) the pitch of the voice is altered, although it be true that the degree in which this alteration takes place is not great. The skin is cold. These phenomena having occurred abruptly, have very naturally alarmed the family, who on the evening before they showed themselves, or perhaps immediately before their appearance, were but little alarmed at the diarrhœa.

Vomiting previously absent, or existing only in a slight degree, has now become an exceedingly urgent symptom. The little patient vomits all fluids which we try to get him to take. He is, however, tormented by burning thirst, as is indicated by his cries, his impatience, and his alternately opening and shutting the lips, as if for the purpose of sucking in cool air. If a spoon or tumbler be placed near his mouth, he will raise his head, however great his debility, and with voracity clutch it, that he may swallow the liquid presented to him.

The matter vomited is bilious and green. The *stools* are no longer lienteric; but consist of a greenish serosity, in which floats a substance resembling chopped spinage or sorrel, and which is found deposited upon the swaddling-clothes; or sometimes, the stools (very liquid) have a slightly yellow, yolk-of-egg, tint. They are always absolutely serous, but never have that appearance of rice-water, so characteristic of the stools in Asiatic cholera-morbus.

The abdomen is usually sunk in: its skin is soft and flaccid, and when pressed between the fingers, it retains for several minutes the fold which has been made. This want of tonicity in the skin is found everywhere, both in the extremities and trunk of the body.

Sometimes the collapsed condition of the body follows tympanites; but tympanites, an unfavourable symptom, is never so great as in the subsequent stage of the disease. The pulse becomes exceedingly rapid, and the temperature goes on falling; the extremities, nose, chin, and tongue become as cold as in Asiatic cholera-morbus, with

this difference, however, that there is very little cyanosis, and very seldom viscid sweat, in infantile cholera. On the contrary, the skin remains dry, and it is only the nails which acquire a bluish colour. The countenance has a leaden hue, but not that peculiar colour which is presented in cholera-morbus: the features are notably drawn and obliterated.

Too frequently death takes place in the first stage, indeed very soon after the invasion of the disease. If the child resist death for a longer period, other phenomena show themselves. Vomiting then seems to recur more frequently, while it very often happens that the diarrhœa stops at the same time. Then, also, the tympanitic distension of the abdomen becomes great.

A notable elevation in the temperature of the skin succeeds the fall of temperature of which I have just spoken: the skin at the same time regains its tonicity to such a degree that the folds made by pinching it do not remain, as was formerly the case. The tongue is red and dry; the eyes are injected.

Infantile cholera now begins to enter into a new stage—the *typhic stage,* which though analogous to the typhic stage of Asiatic cholera-morbus, differs from it in several characteristic particulars.

Sometimes, simultaneously with a cessation of the vomiting, the diarrhœal stools reappear. They have a bilious colour, more or less decided, and sometimes they bear a strong resemblance to the evacuations in epidemic dysentery from their glairy, sanguinolent, and at times even purulent appearance. Then, the tympanitic distension of the abdomen diminishes a little, but does not disappear.

During the continuance of these symptoms, the child falls into a stupor. This state of stupor, combined with the injected, upturned eyes, give the child the aspect of a patient affected by cerebral fever: appearances are the more calculated to mislead from the patient occasionally uttering that plaintive cry heard in hydrocephalus, and which may occur in the *tache cérébrale* as well as in encephalo-meningitis.

I have stated that infantile cholera sometimes proves rapidly fatal to children. If the cold stage continue for more than twenty-four or twenty-six hours, death is almost invariably the issue.

When there is a sensible diminution in the evacuations, life is prolonged; and the typhic stage may last for three, six, or even eight days.

However serious the *prognosis* may be in this disease, which

every year snatches numerous victims, there is always a hope that the child will recover, if placed in favourable hygienical conditions, and *treatment* be steadily carried out such as I am now going to describe.

The most important prescription is rigidly low diet: as suitable drinks, we ought to order the decoction of barley or rice, and the *eau albumineuse*, which is made by diluting the white of four eggs with a litre of water: this albuminous water is sweetened to taste by adding sugar, and aromatised with orange-flower water.

I look upon the *mustard bath* as the most powerful medication in infantile cholera, when the disease is in its first stage. Into a bath containing twenty-five litres of water, we put fifty grammes of flour of mustard formed into a porridgy paste with cold water, and enclosed in a little linen bag, just as is done in preparing a bran bath. By squeezing the bag, a strongly sinapised water is obtained. Observe that the mustard paste is to be made with cold water: the use of hot water, in place of promoting, prevents the extraction of the essential oil, which is the active principle of mustard. It would be a similar mistake to use vinegar, with the view of producing a stronger sinapism.

The little patient is immersed in this bath for twelve or fifteen minutes, a time required to obtain reaction, which comes slowly, from the state of the skin. The child is then wrapped up in very dry linen: and the same treatment is repeated two, three, or four times during the day. The proper duration of the immersion can be estimated by the person who supports the child in the bath. The nurse ought to be told, that as soon as she feels her immersed arms smarting with heat, the child must be taken out of the bath.

Gentlemen, in connection with the mustard bath, allow me incidentally to direct your attention to the remarkable effects which you have seen it produce on more than one occasion in women in St. Bernard's ward, for whom I prescribed it in many very diverse circumstances, a subject regarding which I shall probably have to speak to you on some future day.

You, no doubt, have been surprised, as I myself have been, to hear patients complain, that some minutes after immersion in the sinapised water, they have experienced an exceedingly painful sensation of cold. It seemed to them, they have said, as if they were in freezing water, the ice on the top of which had been broken; and (to use their own comparison), they felt as if cut in two by the cold.

If we are present when such patients get their bath, we will observe that they shiver with cold, that the cutaneous surface becomes intensely red, and assumes the appearance called goose-skin. So severe is the feeling of cold, that some of our female patients beg to be taken out of the water before the lapse of the prescribed time; and they even continue to shiver for some minutes after they have been replaced in bed, well wrapped up in woollen blankets.

Reaction, however, is not long in being established; and the icy coldness is soon succeeded by a notable elevation of temperature.

Having made this statement, I now resume my remarks on the treatment of infantile cholera. In the first period of the disease, the sinapised bath is, I repeat, one of the most powerful medications—perhaps the most powerful medication—with which I am acquainted. Concurrently with it, however, you require to employ other remedial measures.

You will, in the first instance, have recourse to *ipecacuan*. To a child between one and two years of age, administer from 30 to 40 centigrammes in the 24 hours, divided into two or three doses. This, Gentlemen, you will find is a new application of the substitutive method, the good effects of which in affections of the digestive organs, I have already pointed out.

Next come *diffusible stimulants*. *Ether*, in the form of syrup, is the most convenient preparation to employ. It may be given in dessert-spoonfuls every hour or every half-hour; and, in fact, as it contains only a small proportion of ether, the patient may take from 100 to 200 grammes of it, without any inconvenience, during the 24 hours.

You, at the same time, prescribe the distilled waters of mint and balm-mint; and, as a tisane, you order the "*decoction blanche*" of Sydenham, or, better still, the "*eau albumineuse*."[1]

In the cold stage of infantile cholera, *purgatives*, as well as emetics

[1] The "white decoction" of Sydenham is a remedy much used in France for chronic diarrhœa. It is prepared by adding the following ingredients to 1000 grammes of water:—

Calcined hartshorn, 8 grammes;
Crum of white wheaten bread, 24 grammes;
Gum Arabic, 8 grammes;
Simple syrup, 60 grammes; and
Distilled cinnamon water, 8 grammes.

The albuminous water is described in the preceding page.—TRANSLATOR.

are indicated. The purgative which I prefer before all others is the *hydrargyrum cum cretâ*, a remedy of which I have formerly spoken, one greatly esteemed on the other side of the Channel, but which is too little used in France. This medicine (which is mercury killed in chalk) administered in doses of from five to ten centigrammes, generally stops the vomiting, while it also modifies the character, and diminishes the quantity of the stools.

Along with these useful remedies, there is another—*opium*—of which I have already spoken as a medicine which there is a great temptation to use imprudently. This is a point on which I have already stated to you my views: I cannot express myself too strongly against this agent: I repeat, that I am not acquainted with one more disastrous in its effects, nor more frequently and more imprudently employed.

I often see it prescribed in doses so large, that if they were not in great part vomited, the patient would inevitably be poisoned. Recollect the statement I made in a previous lecture: I told you that a single drop of laudanum suffices to throw a year-old infant into a stupor which may last for forty-eight hours; and nevertheless we find that five, six, seven, or eight drops are fearlessly given in potion or lavement. Opium is largely given in the form of syrup; and when there exists timidity in giving that preparation, none is experienced in administering the syrup of white poppy, 30 grammes of which contain 30 centigrammes of the extract of poppy, which, though supposed to be a very harmless dose, frequently acts more energetically than five centigrammes of extract of Smyrna or Constantinople opium. Syrup of lactucarium is also prescribed, the action of which is dependent on the quantity of opium it contains.

But perhaps there is no opiated medication so dangerous as a lavement of decoction of poppy heads. This preparation, generally looked upon as harmless, and constantly being given without medical advice to very young infants, is one of the most treacherous which can be used, in consequence of the variable amount of the quantities of the active narcotic principles contained in the head of a poppy. Not a year passes in which we have not deaths to register from the improper use of this medicine.

The best method—in my opinion the only proper method—of administering opium, particularly if the patient be a child, is to give Sydenham's laudanum, the doses of which it is easy to graduate. We

may begin with a quarter of a drop or half a drop, progressively increasing the quantity, according to the observations we make on the susceptibility of the individual patient. Thus acting, we may proceed in all security, because we know what we are doing.

This is an absolute rule which must never be deviated from. I have already formulated it to you many times: nevertheless, I again insist on it to-day, for its importance is so great that it cannot be too earnestly proclaimed.

In the disease, now specially before us—in infantile cholera—opium in every form ought to be rigorously avoided. Though, in some cases, it put a stop to the vomiting, it too rapidly leads to the typhic stage, which is most to be dreaded when it comes on early in the course of the disease, exactly as in Asiatic cholera.

Mustard baths, emetics, diffusible stimulants, and mercurial purgatives, are the most important remedies in the cold stage of infantile cholera. By their use, we may obtain very successful results; and when we cannot arrest the progress of the disease by employing them, we may at least prolong the patient's life, and so enable him slowly to pass without drawback into the second stage, during which there is an increased chance of recovery.

In the second period, the indications are to continue the albuminous and feculent drinks, and to use mild laxatives, such as the neutral salts, but particularly calomel in very small doses.

When vomiting has ceased, and the diarrhœa is quite established, we administer levigated chalk, trisnitrate of bismuth, and lime water.

The cold bath is a very useful means of subduing nervous symptoms.

Should the diarrhœa persist, recourse must be had to nitrate of silver: in potion, the dose is one centigramme—in lavement, from 5 to 25 centigrammes, dissolved in from 60 to 100 grammes of distilled water.

You must, however, remember, that the cases in which recovery takes place are few in number, death being the usual termination of infantile cholera, particularly when it attacks children prematurely weaned. We augment the chances of recovery in such cases by providing a good wet-nurse. Do not suppose that although a child has been a long time without taking the breast, it will be impossible to induce him to resume it. No doubt, the longer the period which has elapsed since an infant has discontinued the habit of sucking,

the more difficult will it be to get him to begin again to take the breast: but with patience and perseverance the object may be attained, even after three, four, or five weeks have passed without sucking. The younger the weaned infant, the more readily will he be induced to resume sucking, because his actions are more the result of instinct than manifestations of volition.

The most serious consequence resulting from premature weaning is infantile cholera. It is something more than an excessive intestinal catarrh proceeding from enteritis caused by continuous indigestion in itself sufficient to determine a vicious alimentation, out of harmony with the digestive aptitudes of the individual. The influence of season by putting its stamp upon it, makes this enteritis a special enteritis of a character so malignant, as too often to baffle our therapeutic efforts.

In these cases of intestinal catarrh, in which the special element of infantile cholera is absent, the treatment ought to be conducted in accordance with the indications which I described in a general manner when lecturing upon diarrhœa.

Here, the raw meat system, of which I spoke to you when discussing chronic diarrhœa, plays an important part.

Some months ago, you saw me prescribe this treatment for a child who occupied (along with his mother) bed 19 of St. Bernard's ward. This child came in with an obstinate diarrhœa, which, in the first instance, resisted all our curative measures. I then resorted to the use of raw meat: from the second day of this treatment, the intensity and copiousness of the diarrhœa decreased.

This treatment is not a novelty. I have employed it for many years: and it has also been adopted by others, particularly by Drs. Blache and Henri Roger, my colleagues at the Hôpital des Enfans. Notwithstanding its efficacy, it has hardly yet taken its proper place in practice: many physicians are hostile to it: at least, when I propose it, I find my proposition treated with ironical incredulity by some of my honourable brethren.

It came to us from the north, thirty years ago. A Russian physician, Dr. Weisse of St. Petersburgh, introduced it to the notice of the medical profession. He was led to make use of it from circumstances which I shall now describe.

For some months, he had been treating a year-old infant, exhausted by colliquative diarrhœa and reduced thereby to the condition of a skeleton. One day, the mother asked Dr. Weisse to

allow her to give raw meat to the child; and he consented, recollecting that some physicians allege they have obtained good results from its use in disease accompanied by a hectic state. Next day, he was amazed to see the child chewing a bit of raw meat. Having found portions of undigested meat in the stools, he ordered that in future the little patient should not have more than three spoonfuls a day of very finely minced meat. Digestion was performed easily; and in some weeks the patient, formerly supposed to be hopelessly lost, was completely restored to health.

Dr. Weisse's remarks having come to my knowledge, and similar facts having also been reported to me by foreign physicians, I, in my turn, made experiments; and have ever since had occasion to speak favourably of this mode of treatment.

My observations, which were at first confined to children, were afterwards extended to adults; and when I was speaking to you of chronic diarrhœa, I cited the case of a young married lady who was cured by the raw meat system. But there is no condition in which this singular method of treatment is more useful than in the diarrhœa which supervenes at the period of weaning. Whether weaning take place prematurely, or after complete dentition, the digestive canal is unaccustomed to the new description of food.

Under what form ought the raw meat to be given?

Take a piece of lean beef, mutton, or fowl—beef or mutton, however, being preferable—cut it up into very small morsels, so as to constitute a sort of hachis, and then put it into a mortar and with the pestle work it into a thick mass. The pulp so made is forthwith passed through a cullender, so fine as to permit nothing to pass except the juice of the meat, the fibrin of the blood, leaving behind only blood-vessels and cellular tissue. By this means, a real *purée de viande* is obtained, which is collected by scraping the external surface of the cullender.

The preparation of the meat, as you see, demands a certain amount of patience. When so complete a result cannot be obtained, we may substitute for the *purée de viande*, meat chopped as small as possible; for this can be digested easily, though with less facility than the *purée*.

The proposal to use this singular remedy is generally received disapprovingly by mothers, who estimate the probable repugnance of their children by their own actual disgust. You also run the risk of opposition from servants, who greatly dislike to add to their

usual routine of duty, a task so troublesome as the preparation of the *purée de viande.*

As for the children, it often, nay it generally, happens that they show none of that repugnance to this kind of food which they have been expected to manifest. At once, they take it without the least grumbling. From the very first day on which it was given, you saw our little patient of bed 19 devour daily his 125 grammes of raw meat. In this, there is nothing which need surprise you, when you see children take, not only without disgust, but even with satisfaction fish oil, which very few of you would like to taste.

There are some, however, who have a profound aversion to raw meat. For them—allow me the phrase—we must gild the pill. There is nothing more easy than to do this. We make the pulpified or minced meat into little balls with salt, sugar, fruit-jelly, or conserve of roses, the mixture and selection of ingredients being regulated entirely by the taste of the patient. Raw meat, when well prepared and disguised in this manner, is easily taken: its taste is masked in such a manner as not to be at all disagreeable. Should the meat not agree with children when mixed up with salt, powdered sugar, jelly, or conserve of roses, it may be put into a clear gravy soup, as if it were tapioca or sago. It may likewise be mixed with chocolate, made with water; and although such a combination is in direct opposition to the ordinary rules of the culinary art, it is one which patients find much to their liking.

By trying these different combinations, which admit of being infinitely varied, we discover the one which is most readily accepted. Children soon become accustomed to the use of raw meat, and ultimately take it, not only with pleasure, but even with so much voracity, that on their little allowance being consumed, they will demand another supply, just as if it were the most dainty dish.

In adopting the raw meat regimen, it is necessary to proceed with a certain amount of caution. Begin by administering small quantities; for if you all at once give the patient large quantities, there is a risk of aggravating in place of curing his indigestion; and on the other hand, by commencing too, abruptly, you may create invincible disgust for your aliment.

Nothing is more simple than to measure and weigh the quantities to be given in the twenty-four hours. This requires no special apparatus: our current French coins will serve very well as ordinary weights, and will be more easily remembered. As you know, a silver

twenty-centime piece represents exactly one gramme—and a silver five-franc piece weighs twenty-five grammes.

We may begin by prescribing raw meat equal in weight to a five-franc piece to be taken daily in three doses. If these 25 grammes are well digested, the daily allowance may be at once doubled, and progressively increased from day to day, according to the manner in which the child bears preceding doses, till a daily administration of from 100 to 150 grammes is attained. Having reached this point, the child must be kept at it for some time. If the appetite be keen, and health be evidently returning, the daily quantity of raw meat may be increased at the rate of 25 grammes a day till a daily allowance of 200 grammes or even of 500 grammes has been reached!

During the time that the raw meat regimen is being pursued, it is indispensable to forbid the use of every other kind of aliment, and all drinks except nutritive drinks. The nutritive drink which is specially appropriate is the *eau albumineuse;* it is useful from the modifying influence which it has upon the diarrhœa, and from its being so agreeable that children take it willingly.

For some days after the commencement of this regimen, it is very usual to find the raw meat almost unchanged in the stools of the children; the fæcal matter, at the same time, contains a large quantity of decolorised fibrin. That ought not to surprise you; nor ought it to discourage you from persisting in the treatment. Assuredly 75 or 100 grammes of raw meat in passing over the intestinal surface must leave some nutritious matter to be absorbed. In point of fact, it is soon seen that the little patient has regained strength. After the lapse of a certain time, sometimes after four, six, or eight days, the excrementitious matter begins to be moulded in the gut: its smell is exceedingly fœtid, recalling the odour of the excrement of purely carnivorous animals. This little inconvenience is of slight consequence, and need not be a cause of anxiety. All that is necessary is to know that such an effect is produced, and to give the relations notice of what may be expected.

It is difficult to fix a period for the duration of this treatment. Sometimes, it does not admit of being suspended, from the children becoming so habituated to the raw meat that they will take no other kind of aliment: and sometimes also, a change of regimen, brings on unfavourable symptoms.

One of my grandsons was an example of this. When sixteen months old, he was attacked by diarrhœa, which resisted bismuth,

chalk, nitrate of silver, rhatany, monesia, opium, and in fact every remedy, till I gave him raw meat. From that time, his malady yielded, and health was re-established: I continued the regimen, however, for more than a year. The child at last was taking daily 500 grammes (rather more than an English pound) of pulpified raw meat. Whenever I suspended its use, the diarrhœa returned; and to maintain recovery, it was necessary to continue the treatment.

Gentlemen, I certainly do not announce this medication as an infallible means of cure: I only say that in a great number of cases it has proved remarkably successful in my hands, and in those also of others; and that I have obtained cures through its instrumentality when all hope of recovery seemed to have been lost.

Twin sisters, aged 17 months, daughters of one of the largest manufacturers at Mulhouse, were brought to Paris at the time of the Universal Industrial Exhibition in 1855. They were in a frightful state of emaciation. They each weighed between fifteen and sixteen pounds (French), their skin was covered with petechial patches, some of which were equal in diameter to a five-franc piece. They vomited all food that was administered to them, and even vomited the sugared water which they took. For three months, from the date of their weaning, they had been exhausted by serous diarrhœa. Considering the formidable character of their symptoms, and the radical deterioration of their constitutions, I could only entertain very slight hopes of improvement. We were, at the period to which I refer, in the full tide of summer. The family lived in the Champs Elysées, where the poor babies were daily dragged about under an ardent sun in a little carriage. Upon one occasion, their nurse returned from the promenade in a state of great excitement, declaring that she did not wish to go out with them again, as she had been taunted by passers by, who had expressed themselves as indignant at seeing children taken out who appeared more dead than alive. I narrate this little incident to show you the terrible state to which these wretched little creatures were reduced. Though I had not much hope of being useful, I was anxious to try something. I recommended raw meat. The result exceeded my hopes. Digestion was re-established: and when the little girls left Paris, they could not have been recognised as the children who had arrived. They had regained health, and a surprising amount of plumpness. The raw meat regimen was continued

for a year. Some time later, their father, in testimony of his gratitude, sent me their photographs.

It is a curious fact, that one of the little girls was affected with tænia solium during the course of her malady. The extract of male fern soon brought away from ten to twelve meters of tapeworm. Six months later, and during the time she was eating the raw meat, the same child had a second tænia solium, which she got rid of by the use of the same means which were employed on the former occasion. Are we to attribute the presence of these worms to the regimen which the child had been following? These entozoa, as you are aware, are frequently met with among the inhabitants of Abyssinia, who habitually make use of raw meat. We may ask, whether we are to attribute the worms in this child to her having passed a portion of her summers at Bâle (in Switzerland), where tænia may be said to be endemic?

I am inclined to believe that the regimen was really the cause of the tænia in this child, because several physicians, including Weisse, Braun, and Von Siebold,[1] have often observed worms, particularly the tænia solium, in persons whose exclusive aliment was raw meat. Be that as it may, the verminous affection was no obstacle to the cure of the diarrhœa, which was the cause of my having been called in.

To assist the beneficial action of, and facilitate the tolerance for, the raw meat, it is necessary to employ agents of the materia medica in conjunction with it. Opium administered in minute doses, in accordance with the rules which I have given you, is a valuable resource. When it fails, I give chalk, and subnitrate of bismuth, at meal times, and in the interval between meals, in doses of from one to four grammes. Along with these medicines, I sometimes give the sesquinitrate of iron, a preparation specially commended by Graves: I prescribe it to be taken in doses of two or three drops during meals.

Finally, when the circumstances call for it, I also recommend tonic treatment. In this class of cases, I find the tincture of nux vomica a very useful tonic. Of this I order to be taken, in the course of the twenty-four hours, only one drop, which is prescribed in a liquid mixture, so that it may be taken in three separate doses. I have also had good results from the use of hydrochloric acid.

[1] Braun and Siebold:—*Journal für Kinderkrankheiten* for January and February, 1858. Erlangen: 1858.

LECTURE LXXIII.

LACTATION, FIRST DENTITION, AND THE WEANING OF INFANTS.

LACTATION: *natural, artificial and mixed.—Lactation in respect of the Woman.—Conditions essential to a Good Nurse.—Influence on the Lacteal Secretion of Menstruation, Conjugal Relations, Pregnancy, and Intercurrent Diseases.—Lactation in relation to the Nursling.—Weighing the Infant is the only means of ascertaining whether it is sufficiently suckled.*—FIRST DENTITION:—*Mode of Evolution of the Teeth in Groups.—Order of succession in which they appear.—Casualties of Dentition.—Febrile Discomfort.—Convulsions.—Diarrhœa.*—WEANING.

GENTLEMEN:—The subject of my last lecture was infantile cholera, which I told you was the most serious affection which resulted from premature weaning. I reserved for to-day's meeting some considerations regarding lactation, the first dentition, and weaning.

Every one knows the meaning of the term *lactation*. It signifies the alimentation of the infant, by its sucking from the breasts of its mother or another woman. In the definition of *natural lactation*, feeding with the milk of animals has been sometimes included; but this more properly is considered as comprised in *artificial lactation*, which for the most part consists in giving the milk of the cow, or the goat, by means of a feeding-bottle or spoon. *Mixed lactation*, the system usually adopted, is a combination of the two others. Natural lactation, as I shall tell you forthwith, is undoubtedly the method which ought to be preferred: but from this general rule, there are exceptions.

Before considering how lactation ought to be conducted, the question arises:—What are the conditions required in a good nurse?

First of all, a woman, to be a good nurse, must be in the enjoyment of perfect health: but from this proposition—to which self-evident truth gives a character of common-place—it is not to be inferred that every perfectly healthy mother is fit to nurse her infant. Some puny-looking women are very good nurses. There are also vigorous robust women whose breasts secrete an insufficient quantity and a bad quality of milk; and this inaptitude to nurse occurs without our being able to assign a reason, or when consulted to predict its occurrence.

However, with the reservation now stated, a healthy woman will in general make a good nurse. We judge of the state of health by the woman's appearance, by examining the state of the different organs, and by such additional information as we can obtain. No very great importance can be attached to the complexion and colour of the hair: fair and dark women make equally good nurses. Beautiful teeth, so important in the opinion of some persons, have really no other advantage than increasing good looks.

The manner in which the menstrual function is performed may, to a certain extent, be regarded as an indication of the manner in which milk will be secreted. If menstruation be irregular and scanty, there is a fear that the lacteal secretion will be badly accomplished: and nursing fitness is also improbable when the menses are habitually too abundant, for the chances then are, that after giving suck for two or three months, the menstrual flow will recommence, the mammary fluxion, hitherto energetic, being counter-balanced or annihilated by the uterine. The presumption is in favour of a woman making a good nurse, if she be regular in her menstrual function as regards time and quantity of flow. I use the word *presumption*, because we cannot, I repeat, give in advance an absolute opinion.

The state of the breasts, even, does not give us sufficient evidence by which to decide the question, although it furnishes information of positive value.

We must judge of the breasts less by their size, than by their form, the appearance of the skin covering them, and the shape and development of the nipple.

The largest and roundest breasts are not always those which yield most milk; for it often happens that mammary development is due to a predominance of cellular tissue and fat, while smaller pear-shaped breasts indicate development of the gland itself, promising

therefore a more abundant secretion of milk, particularly if their skin is marbled by veins, testifying richness of circulation.

As to the nipple: it ought to enter easily into a state of erection, and be of size sufficient to enable the infant's mouth to get a good hold of it in sucking.

When there is to be an abundant secretion of milk, it begins to be secreted long before parturition. The breasts, which from the very commencement of pregnancy had been somewhat swollen and tender to the touch, and at the third month were surrounded by the characteristic areola, show, towards the end of the fourth month, an oozing of colostrum, which is sometimes so considerable as to stain the woman's linen. Immediately after delivery, this flow of colostrum becomes more copious; but four or five days elapse before the secretion has all the characteristics of milk.

It is usual to press the breasts, with a view to determine whether the milk is or is not abundant; but this manipulation requires certain precautions, and the taking into account of many details. It is essential to practise this sort of milking with the greatest possible gentleness, otherwise unpleasant mental emotions may be caused in the woman when under examination, which will prevent the secretion of milk, just as it is stopped in the cow and other animals which furnish a less supply of milk when the operation of milking is roughly conducted. For the same reason, it is necessary, in addition to being careful to make gentle pressure, to avoid producing a sudden feeling of change of temperature in the skin, by using a cold hand.

When these precautions are properly taken, the milk spurts out vigorously through several orifices in the nipple, unless indeed these apertures are partially plugged by milk which has remained in them since the woman last gave suck: under such circumstances, the nipple ought to be washed before practising the manipulation.

It often happens that when the secretion is very abundant, the milk spurts forth spontaneously, not only from one breast while the infant is sucking the other, but even from both breasts when the infant has not been sucking for some time. This spontaneous secretion—this rush of milk [*montée du lait*] as it is called—is announced by a peculiar sensation, a sort of itching which, though generally agreeable, is sometimes painful.

The quality of the milk generally corresponds with its quantity. It would be wasting your time, to enter here into all the details of

this subject. I shall confine myself to recalling to your recollection facts which I have had occasion to bring under your notice when speaking upon other questions. The milk of a woman may be perfectly good for a particular child, and exceedingly bad for another: certain circumstances may modify the good qualities of the milk; and I must also remind you, that there are a few exceptional infants whose digestive organs cannot tolerate any kind of milk, whether it be woman's milk, or the milk of a cow, goat or ass.

Although, as a general rule, women do not menstruate when giving suck, there are some in whom the menses reappear during lactation. If the menstrual discharge is very abundant the secretion of milk not unfrequently ceases if the menstrual flow be moderate, the lacteal secretion and lactation suffer, whilst menstruation is going on. Besides being injured by having less to take, the infant sometimes suffers from intestinal symptoms, such as diarrhœa, and colic.

A nursing mother grows fat during the first months of lactation; but towards the end of the first year, this plumpness is lost, showing that the lacteal secretion is too great a pull on the health. In these cases, the infant requires supplementary diet.

I have still a few concluding remarks to make on lactation in its relations to the woman. *Conjugal intercourse* is not injurious to nurse or nursling, provided it be regulated by great moderation. *Pregnancy* supervening during lactation produces no other bad consequences than a diminution, or complete drying up of the lacteal secretion; the milk, however, does not acquire any bad properties from the existence of pregnancy. If the infant begin to ail, it is because its food is no longer sufficient in quantity. Supplementary alimentation then becomes necessary; and this may lead to the bad consequences which I have brought under your notice, as liable to occur when the nursling is not old enough, or otherwise not in a suitable condition to be weaned.

It has been alleged that lactation favours recovery from intercurrent diseases, the idea being that convalescence is shortened by the mammary fluxion establishing a sort of derivative action of a very energetic kind. Without giving quite so affirmative an opinion on the subject, I may say, that, according to my own experience, lactation does not complicate acute diseases, and that it even seems as if a woman by discontinuing to give suck during the course of a malady, probably of short duration, does that which was dangerous

both to herself and infant. Should, however, the disease continue for a month or six weeks, nursing must be suspended, as it then proves a cause of exhaustion additional to that arising from the intercurrent acute affection. The discontinuance of nursing may be not a matter of choice but of necessity; for the long continuance of a febrile state may diminish or quite dry up the supply of milk.

You know, moreover, that the lacteal secretion, particularly in a good nurse, recommences very easily, becoming as abundant as before, even after having ceased for a fortnight, three weeks, or a month. I have even seen it begin again after having been suspended for three months.

I have already told you how necessary it is that the nipple should be so developed as to give the infant's mouth a good hold in sucking; this suitability of development is also an important matter for the mother, for when the nipple is short and difficult to lay hold of, it is irritated by the infant's difficult attempts at sucking, and so rendered more liable to erosions and fissures, which latter are sometimes very deep and painful. The fissures, too, may become the starting point of inflammation, which, reaching the mucous membrane of the mammary canals, will cause them to become obliterated, and so lead to the breast being affected with engorgements of milk constituting "the hair" [*le poil*], an affection which terminates in the formation of numerous abscesses.[1]

When erosions and fissures begin to form, it is necessary, when they are limited to one breast, to cause the infant to suck, as much as possible, only from the other breast. The fissures ought to be washed with Goulard's water, a decoction of rhatany, or a decoction of oak bark: they may be dressed with pomades of tannin, rhatany, white precipitate, or red precipitate: or, better still, they may be touched with the solid lunar caustic. If there is a tendency to the formation of new fissures, the woman must adapt an artificial teat to her nipple. It ought to be small, and so constructed as to embrace the nipple. Before it is used, it ought to be washed in warm water and sugared milk; and the nursing woman ought to

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[1] "*Le poil*" is the vulgar name in France, for *mastitis;* and is really a translation of the Latin, "*morbus pilaris.*" This absurd term was originally applied by the ancients to mammary engorgements, from the strange notion of Aristotle, that they were caused by accidentally swallowed hairs passing from the stomach into the mamma!—TRANSLATOR.

press her breast in such a way as to facilitate the infant's exertion of sucking.

So much then for lactation in its relations to the woman: let us now see how it ought to be conducted for the benefit of her nursling.

The infant has just been born! As soon as the mother is able to sit up—by that I mean, two or three hours after delivery—the infant ought to be put to her breast, even although the milk may not yet have come into it. This practice is, on the one hand, useful as the suction fashions the nipple: on the other hand, it frees the ducts from concreted colostrum: thirdly, from the first, it gives the nursling good habits. I am opposed to the custom of giving with a spoon sugared water to infants during the first twenty-four hours after birth, because it is teaching them to drink without sucking: this is bad; for sucking is toilsome work which an infant will only be too glad to avoid if shown how otherwise to obtain its needed nourishment.

Let, therefore, the infant be put immediately, or at least as soon as possible, to the mother's breast. After the second day, it will there find sufficient nutriment. At first, it ought always to be put to suck on awaking from sleep. But after ten or twelve days, when sucking abundantly at each time of nursing, the feeding ought to be by rule, for the sake both of mother and child.

By sucking abundantly, I mean the infant taking each time that he is put to the breast, 60 or 80 grammes [about $1\frac{1}{2}$ to 2 fluid ounces] of milk. If a strong vigorous infant takes less than this quantity, the nurse is bad. Here, Gentlemen, is the one and only test by which you can determine whether a woman is or is not a good nurse: it was devised by my honourable colleague Professor Natalis Guillot.[1]

Before applying the infant to the nurse's breast, it is weighed in its swaddling clothes: when it has sucked, it is again placed in the scales without any change of clothes being allowed. The excess of weight at the last over the first weighing gives the exact weight of milk which has been swallowed. The infant, I repeat, ought to take at least from 60 to 80 grammes, during the first period of lactation: when four or five months old, he ought to take 250 grammes at one nursing, and about 1500 grammes in the 24 hours.

Some children, whose nurses have a very copious supply of milk, always regurgitate some of it immediately after sucking. With a view

[1] Natalis Guillot:—De la Nourrice et du Nourrisson. *Union Médicale*, 1852; p. 61—65.

to prevent this occurrence—not, however, one of much consequence—the woman ought to place her finger upon the orifices of her nipple which will prevent a too rapid flow of milk. The infant ought to be so trained as to suck five or six times between six in the morning and nine in the evening. It is very important that it should, if possible, not be nursed during the night, so that the mother may have eight or nine hours of undisturbed sleep, which is necessary for her retaining health, and properly nursing her infant. If she do not get this amount of rest, her strength will become exhausted, and her nursling will suffer. If the infant is a bad sleeper, it must be sent away from its mother to another room, and suckled with the feeding-bottle during the night.

Under these rules, the infant attains the age of four, five, or six months. He may then be allowed to take thin farinaecous soups made of arrow-root, tapioca, cassava, vermicelli, rice-flour, bread-crumb (well boiled and passed through a cullender), or better still, hasty-pudding made of wheaten flour: this latter is the best and cheapest farinaceous food. These farinaceous aliments ought to be prepared with milk diluted with sugared water, or with butter. In certain proportions, meat soups may also be given; but they must not constitute the principal part of the supplementary diet.

Natural lactation, as I have stated, is unquestionably the best, and on principle it is prescribed.

Artificial lactation, or in other words, feeding infants by means of the feeding-bottle or spoon with the milk of animals, is, generally speaking, a deplorable system.

In Paris, in particular, but in all large towns, it is the chief cause of infantile mortality: one dies out of every four subjected to this plan of rearing: the three who resist death are generally damaged in health and constitution. As we shall afterwards see, rickets is a very common consequence of this kind of feeding.

When circumstances, irrespective of wishes, compel families to have recourse to artificial lactation, the bad consequences to which it naturally leads may be moderated by attention to certain rules. First of all, the infant must be made to suck from the feeding-bottle, and not allowed to drink from the cup. Drinking from the cup is very objectionable: the milk traverses the mouth too rapidly to be duly mingled with the saliva, the alcaline nature of which prevents the milk being too quickly coagulated on its reaching the stomach.

Cow's milk is the best: the infant ought if possible to have *an*

average milk—that is to say, a mixture of the milk of a great number of cows living in the same byre. This milk ought to be mixed with very thin panada, decoction of barley, or decoction of grits, the proportions of the fluids being one third of water to two thirds of milk. This mixture when given to the infant is moderately sweetened, and heated to the temperature of the body.

When this aliment does not agree with the infant, a small quantity of bicarbonate of soda ought to be added: not more than from 30 to 50 centigrammes of it ought to be given in the twenty-four hours, the quantity administered at each feeding being, therefore, about five centigrammes. Should this admixture with bicarbonate of soda not prevent the milk being rejected, one drop of laudanum—but not more than one drop—may be added to the entire quantity of food taken during the day.

Notwithstanding the adoption of all these precautions, some infants will not thrive on artificial feeding. To them, a wet-nurse is a necessity. The lapse of a long period since weaning is no reason why such infants should not be made to resume the habit of sucking. To get them again to take the breast, enticement must be mingled with compulsion: the nurse's nipple must be moistened with sugared milk, and the infant must be deprived of every kind of food and drink, so that hunger may force it to recommence sucking the breast.

I have now come to the great question:—At what age ought infants to be weaned?

Gentlemen, you every day hear parents announce with the utmost precision the date at which their infants ought to be weaned—fixing it, as the case may be, for the age of nine months, a year, or fifteen months. The proper time for weaning, cannot, however, be thus determined by consulting the almanack. It is not at nine months, a year, nor fifteen months, and far less is it at an earlier age, that we are to place the limit of lactation. Remember this truth, and with it indoctrinate the families who ask you to direct the health of their children. Your true guide in this matter is the more or less advanced state of dentition. The infant ought to be suckled till the time is past during which the formidable complications of teething supervene.

The *first dentition* comprises the evolution of the twenty temporary teeth, usually called the milk-teeth, and which about the age of seven begin to be replaced by the permanent teeth.

They make their first appearance in groups, at times, and in an order remarkably determinate.

The *first group* includes the *two lower middle incisors.*

The *second group* includes the *upper incisors*—the middle coming first, and then the lateral. The infant then has six teeth, four in the upper and two in the lower jaw. In passing, let me observe, that, strange to tell, this fact, though known to every woman who has had children, has been ignored by men of science, even by authors who have specially written on this very subject.

The *third group* includes the *two lower lateral incisors* and the *four first molars.*

The *fourth group* is formed by the *four canine* teeth.

The *fifth group* consists of the *four last molars.*

This is the usual order of appearance; but from it the exceptions are numerous. Though nine times in ten, the lower middle incisors are the first to appear, they are sometimes preceded by the upper middle incisors; but in these rare exceptional cases, the lower middle incisors immediately follow the evolution of the others. The simultaneous evolution of the upper and lower middle incisors is a still more rare occurrence. Likewise, in very exceptional cases, the small molars show themselves before the appearance of the second group—that is to say, the upper incisors. With reference to the evolution of the third group, it may be stated that, pretty frequently, the two small molars are seen before the lower lateral incisors. There is seldom any irregularity in the evolution of the fourth and fifth groups.

Notwithstanding the anomalies now stated, there is much more regularity in *the order* than *the epoch* of the appearance of the teeth.

The common opinion is that girls are more precocious than boys. This remark, which is perhaps true in respect of intelligence, would seem to be applicable also to the appearance of the first tooth. I find, as the result of my statistical inquiries into this subject, that in girls, the extreme limits at which the first tooth appeared were the second and the fourteenth months, the sixth month representing the average date; whereas, in boys, the extreme limits were the third and fourteenth months, the seventh month representing the average.

Before proceeding farther, Gentlemen, let me remark upon the absurdity and inapplicability of *averages* when applied to matters

of this kind. Among the boys who furnished me with the statistical table to which I have been referring, seven months was the average date at which the first tooth appeared, but not even in one of the cases from which this average was deduced did the first tooth appear at the seventh month, so that the average of the facts is not applicable to a single individual fact of those furnishing the average. In respect of the girls, the average of six months applies to three of the facts only, that is, to one fourth of them.

Although this application of statistical results is profoundly absurd, we must not on that account reject statistical inquiries altogether as some would wish us to do. A statistical result has this advantage, that it expresses no more than it ought to express; that is to say, a mass of individual facts which group themselves in numbers more or less considerable, and from which we may draw our conclusions, but which conclusions never can be *general*, inasmuch as they do not admit of application to all the individual cases; and, logically, no conclusion which is not applicable to each individual instance can be a *general* conclusion.

Here, Gentlemen, let me once more raise my voice against the system of averages which has been so extraordinarily abused, and which, though overthrown by every rule of the most common logic, attempts to give as truths an average which are only abstractions, not expressing the fact which is most common, but the fact intermediate between extremes, and which itself may seldom or perhaps never exist. I protest against the mad attempt which has been made to base therapeutics upon averages, and to ask from statistics formulated truths which statistics cannot furnish.

Let me now return to the dentition of children. From a collection of cases which I have attentively observed, it would appear that girls are earlier than boys in cutting the first tooth.

Experience has shown, that variations are so great as to render it impossible to fix the exact limits of age at which this event may occur. Some infants are even born with teeth: of this phenomenon many examples have been recorded. When teeth exist at birth, they are generally the middle incisors: then we have the other extreme, some children not cutting the first tooth till eighteen months or even an older age than that has been reached. Between the two extremes, all the intermediate ages are met with—two, three, four, five, six, seven, nine, ten, fourteen months. I take these figures from

the statistical tables of which I have been speaking.[1] It is possible, however, by making an abstract of all the observations made on this subject, to fix a period between six and nine months; and to be still more precise, let me name six months and a half as the period at which the first milk tooth generally makes its appearance.

My former pupil, Dr. Duclos,[2] one of our most distinguished physicians, now in practice at Tours, has come to the same conclusions; and he has also shown, that the first group of teeth, the lower middle incisors, appear between the sixth and ninth months.

There is no great difficulty in determining the exact epoch at which the first tooth has appeared; for mothers, from whom alone on this point we can derive our information, are seldom mistaken. The cutting of the first tooth is an occasion of great maternal rejoicing, and is watched for with peculiar solicitude. But in respect of statements as to the date at which the second and still more the third tooth has appeared, I have much less confidence in the mother's memory.

The cutting of each group of teeth occupies, however, a certain period which, although generally of limited duration, is in exceptional cases more extended.

The evolution of the lower middle incisors generally takes place within a period of from one to ten days.

The four upper incisors are usually cut within a period of from a month to six weeks.

The lower lateral incisors, and the four molars, are cut within a period of from one to two months.

The evolution of the canine teeth occupies from two to three months.

The last molar occupy an equally long period in their evolution.

The evolution of the canine teeth is attended with the most difficulty, which probably arises from their having the longest roots.

The fact to be remembered as that of the greatest practical value in relation to weaning is that between the evolution of each group of teeth, that is to say, between the complete evolution of the last tooth of one group, and the evolution of the first of the succeeding

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[1] Trousseau:—*Journal des Connaissances Médico-Chirurgicales*, for November, 1841.

[2] Duclos (de Tours):—*Bulletin Général de Thérapeutique* for April and May.

group, there is a period during which the progress of dentition remains in entire abeyance.

The duration of the pause between the completion of the first group, and the appearance of the first tooth of the second group, is from two to three months.

The pause between the completion of the evolution of the superior incisors and the appearance of the first lower lateral incisor, or first molar, is two months.

From four to five months elapse between the complete evolution of the last molar and the appearance of the first canine.

There will then be an interval of from three to five months before the appearance of the first molar of the last group.

The periods are not, of course, always so precise as I have now stated, and as M. Duclos has described them: but for us, the important point to bear in mind is that, save in some few exceptional cases, there is a well marked interval between the evolution of the different groups: the interval between the complete evolution of the last molar of the third group and the appearance of the first canine tooth is generally very prolonged; as is also that which separates the appearance of the last canine from the appearance of the first tooth of the last group.

When the entire evolution of a particular group takes place rapidly, the interval between the conclusion of that evolution and the appearance of the first tooth of the following group is more prolonged: and on the other hand, when the evolution of the group is exceedingly slow, there will be very little interval between its completion and the appearance of the first tooth of the next series.

It is not unusual for the first twelve teeth to be cut almost simultaneously without any very distinct pause between the different series.

These anomalous occurrences have for the most part no appreciable cause. Irregularity in the order of dentition does not admit in general of any explanation; nor does it seem to have any significance whatever in respect of the general health of the infant. At the same time, there are certain diseases which almost invariably lead to irregularities both in the order and the time of appearance of the teeth.

There is no disease which exerts so decided an influence of this description as rickets. It rarely shows itself before the beginning of dentition; but when it does then appear, it retards dentition

almost indefinitely. Should it supervene during dentition, about the age, for example, of ten or twelve months, it abruptly interrupts the evolution of the teeth, which then appear at distant intervals. Finally, should rickets supervene at an advanced period of dentition, or even when only a few teeth have appeared, it causes caries of the teeth, all, but particularly the incisors, being apt to become loose and fall out.

It is very important to remark, that tuberculisation, which has been for so long a time, and so erroneously, confounded with rickets, has a precisely opposite effect upon dentition. It is not unusual to see in children, whose glands and pulmonary parenchyma are infiltrated with tubercuIous matter, a regular and even a rapid development of the teeth which, moreover, will probably remain undeteriorated during the whole duration of the malady.

Gentlemen, the facts upon which I have now expatiated, would possess only a moderate degree of interest, were it not that we can deduce from them practical conclusions relative to the subject now before us, and which may be expressed in the *absolute*, I say the *absolute* rule, never to wean an infant, unless some special circumstance render it imperative, till after the period during which the serious complications of teething usually occur.

There is a popular proverb which says—"*bel enfant jusqu' aux dents*"—signifying that the health of a child is most apt to undergo an unfavorable change at the period of dentition.

The possible dangers of dentition are greatest the nearer the period of the evolution of the fourth group; and the popular belief is well founded, that the time of cutting the canine teeth is a time of anxiety. This probably arises from the canine teeth having very long roots; and probably is sometimes also caused by the jaws not being sufficiently developed, for occasionally the sockets are so narrow, that it is difficult to understand how the teeth can become developed within them. Then again, they are the only milk-teeth which come forth within enclosed spaces—the spaces destined for them are between two teeth already developed, whereas all the other teeth are free, at least on one side, whilst they are piercing the gum.

The cutting of the last molars is most exempt from danger, a circumstance explained by the fact that at the period of their evolution the jaws have attained sufficient development: at this period also, the infant has acquired strength sufficient to contend against complications which it could not have resisted at an earlier age.

Let me add, as a concluding general remark, that the manner in which a child cuts its first groups of teeth, affords no criterion by which to judge as to the way in which the evolution of the others will take place.

Having made these preliminary remarks, I now proceed to review the morbid conditions to which dentition may give rise.

The most common complication of teething is high fever, particularly at night, characterised by restlessness, insomnia, and cross temper. Along with these symptoms, the flesh becomes soft, there is a loss of natural colour, and a dark areola appears round the eyes. This state of discomfort, which is a manifest effect of inflammatory action, precedes and accompanies the evolution of each tooth. It lasts from one to eight days; and it generally terminates on the very day on which the tooth shows itself, though it sometimes continues for one day or two days more. The symptoms really are those of a slight traumatic fever. They constitute the most common, and the least formidable complication of dentition. Nevertheless, when the teeth are evolved in very rapid succession, the symptoms now described are quite sufficient deeply to affect the health, and leave on the child's face the mark of the malady.

Sometimes, the disturbed state of the system declares itself by convulsions, which may depend partly on the pain caused by the process going on in the gums, and still more on the fever accompanying it. When speaking of the eclampsia of children, I gave you my explanation of these nervous attacks.

I only name stomatitis to remind you of it; it is very often of sufficient intensity to account for the fever, and is often accompanied by an ulcerative eruption causing intolerable pain as well as sometimes salivation and thrush [*muguet*].

I should say nothing about swelling and engorgement of the gums, which seldom occurs at the time of the evolution of the first teeth, but is more common at the cutting of the canine and molars, were it not that I wish to warn you against a practice which I consider as very objectionable. Mistaking the effect for the cause, many physicians attribute the difficult evolution of the teeth to this swelling, and under the influence of that idea, they scarify or make a crucial incision in the gums for the purpose of facilitating the exit. For that purpose, the operation is, to say the least, useless; and I very much doubt whether it even relieves pain by disengorging the turgid gums.

There is nothing in respect of the affections of the mouth which need detain us. The affections of the skin, so common during dentition demand more attention.

I do not refer to those transient fugitive erythematous eruptions, those red eruptions unaccompanied by pain, and irregularly circumscribed, which after appearing on different parts of the body (but particularly on the face), go away spontaneously, as soon as the influence of the process of dental evolution which excited them has moderated; nor do I refer to nettle-rash which may also show itself: I speak at present only of cutaneous affections such as eczema and herpetic and impetiginous eruptions. These eruptions sometimes occupy a very considerable surface of the body—particularly the impetiginous eruptions which cover the face and hairy scalp, invade the trunk and limbs —causing dismay to families and often to physicians. This is not because they threaten life, but because they occasion great distress to the little patients, and obstinately resist all treatment.

The general inflammatory state of the system [*le mouvement fluxionnaire général*] may show itself by cutaneous affections or by catarrhal affections—by attacks of bronchitis which ought to put us on our guard; but that for which we ought to be specially on the alert is disturbance of the intestines. Some infants are attacked with diarrhœa each time they cut a tooth, so that when in such subjects, dentition proceeds too rapidly, or in a confused manner, exhaustion of strength is the result.

If the diarrhœa do not continue for more than four or five days, if it be not profuse, if the infant be under no bad influence through an unfavorable medical constitution of the season, the catarrhal phlegmasia, of which the diarrhœa is the expression, ought not to make us uneasy: it will cease spontaneously, leaving no trace behind. But if the diarrhœa be prolonged, the mucous membrane of the large intestine will become inflamed, and ulcerate superficially: the phlegmasia, acute when each new tooth was coming through, will at last become chronic, and may lead the infants to marasmus or the grave.

The sympathy which exists between the different parts of the digestive apparatus explains why the disturbance experienced by the stomach and intestines is responded to by their annexed organs. The formidable character of this disturbance is increased by the

accompanying fever modifying the character of the gastro-intestinal secretions.

It is a prevalent belief of the public, and is likewise an opinion of physicians, founded upon a misconception of a proposition of Sydenham, that diarrhœa exercises a beneficial influence during dentition. This is an error respecting which I beseech you to be on your guard, and against which I implore you to exert all your influence. In sucking infants, diarrhœa is a symptom which must be looked upon in a very serious light. Though it cannot be denied that a very moderate amount of diarrhœa seems to diminish the general state of fever and the inflammation of the gums; yet it is equally true, that if the purging last for more than four or five days, or become too urgent, it must be treated with the greatest possible activity.

I anticipate, however, that objections to my views will be urged by some enlightened practitioners, who, in direct opposition to what I have now been telling you, will maintain that the suppression of this diarrhœa is a very frequent cause of serious mischief. It is necessary to establish a distinction. Let us suppose that an infant, during dentition, has pulmonary catarrh or whooping-cough, and at the same time diarrhœa. Should the excessive intestinal secretion be abruptly suppressed, the pulmonary inflammation will very often assume a corresponding increase of intensity: and the patients may evidently die from the imprudence of the treatment. But in such a case the question is not as to diarrhœa in relation to dentition: what we have to consider is a pulmonary affection which may be aggravated by suppressing the intestinal flux quite irrespective of the patient's period of life. Do we not see the cough of adult phthisical patients relieved by diarrhœa, and do we not see the severity of their cough and fever return when they become constipated? It would, however, be pushing the assertion beyond the limits of truth were I to argue that diarrhœa is always a salutary crisis in phthisis: still, you can understand that without maintaining any such proposition, I may hold that the diarrhœa if it do not proceed too far may be a favorable occurrence. Now, this restriction is similarly applicable to the diarrhœa which, in illustration of the point before us, I supposed in the teething child, as in the case of the phthisical adult. This intestinal flux ought not in such a case to be abruptly suppressed: but it is quite different when diarrhœa is the sole complication of teething. Diarrhœa, under such circumstances, requires to be combated by the

most active measures; and no untoward consequence will follow the adoption of such a course.

The intestinal complications of dentition are always most serious in children prematurely weaned. When the infant is unweaned, to give the breast almost always suffices to stop the purging, the administration of preparations of lime and bismuth being hardly necessary. When, however, the infant has been weaned, the practitioner finds himself in this cruel dilemma: he must either put the patient on low diet, which will ere long produce disastrous cachexia, or give such food as will daily excite new attacks of indigestion, which by the frequency of their recurrence will at last produce inflammation.

The infant, by being subjected to an unsuitable regimen, becomes the subject of enteritis. The affection is characterised by stools which are very profuse and frequent, consisting of a mixture of green and yellow matter, like chopped vegetables, to which the name of "*hachures d'herbes*" has been given: glairy and lienterie, they contain lumps of firmly curdled milk, which indicates that stomachal and intestinal digestion are not being performed, the food traversing the digestive canal without undergoing the normal changes. During the course of this chronic diarrhœa, even when the purging is not of more than ten or twelve days' duration, the infant is suddenly seized with bilious vomiting. A time soon comes when the food, be it what it may, whether soups made with milk or butter, panada, or even toast and water, are returned in the state in which they were taken, appearing to be no more acted upon in their passage through the intestines than if they had traversed an inert tube. The infant becomes perceptibly thinner: from morning to evening, and from evening to morning, it utters plaintive cries, and will not be comforted; and should a wet-nurse not be procured, to supply the sole description of aliment which agrees with it, death from inanition ensues. If it resist, its health is not the less seriously compromised; and when I shall have occasion to address you on the subject of rickets, I shall have to tell you that in most cases it is caused by unsuitable and insufficient food.

But when children in this deplorable state are subjected to the influence of the summer season, the diarrhœa assumes a special character, and becomes infantile cholera.

You now, Gentlemen, understand my reasons for saying that children ought not to be weaned till they have passed the period

during which formidable complications of dentition are of most frequent occurrence.

My rule, provided there be no serious obstacles to surmount other than the wishes of the family, is not to wean the child till after the complete evolution of the canine teeth, which is generally a more difficult process than the evolution of the incisors or first molars. My rule, therefore, is to wait, irrespective of age, till the infant has sixteen teeth.

When, however, as is unfortunately too often the case, circumstances render it impossible to continue lactation till sixteen teeth have appeared, I wait till there are at least twelve. Between the evolution of the third and fourth groups, there is generally a sufficiently long interval of rest for the digestive organs to recover from the fatigues to which they have been subjected, and to become more disposed to receive the new aliment to which they are unaccustomed.

Should pressing reasons relating to the health of the nursing mother, or considerations of a pecuniary or personal character necessitate the premature weaning of the child, an endeavour must be made to prolong lactation till the evolution of a group of teeth already commenced has been completed: if the infant has only three or four incisors, we ought to wait till it has six. It is specially important to wait should the time fixed on for the weaning be the hot season, for summer weather (contrary to vulgar belief) is the most unsuitable for weaning, inasmuch as it favours the development of diarrhœa in the terrible form of infantile cholera.

Under no circumstances ought weaning to be abruptly carried out. From the age of four, five, or six months, the infant will have become accustomed to take, in addition to the nurse's milk, farinaceous food and soups, the number of feedings and quantity of food being increased as time goes on. By and by, when the teeth have appeared, creams may be added to this aliment, also eggs beat up with milk, and pillars of bread soaked in the yolk of fresh boiled eggs: afterwards, there will be given some chicken bones to be sucked: a little meat will be then allowed; and so by insensible degrees, the stomach and intestines being sufficiently prepared, and dentition sufficiently advanced, the breast-milk may be wholly discontinued and the new diet commenced.

By regulating lactation in this manner, by thus accomplishing

the weaning, we hold in reserve useful curative means should the infant become ill; for then the mother's milk will constitute, under all circumstances, the best tisane which could be administered.

LECTURE LXXIV.

DYSENTERY.

Most formidable of all Epidemic Diseases.—Its Causes unknown.—Eating Fruit blamed without reason.—Opinion of the ancients on this point.—Different Forms of the Disease.—Character of the Stools: Tenesmus.—Bilious, Inflammatory, Rheumatic, Putrid, and Malignant Forms of Dysentery.—Anatomical Lesions.—Treatment: Evacuant the most useful: Employment of Saline Purgatives, Calomel, Emetics, Topical Remedies, and Caustic Injections.—Dangers of Opium.—Sequelæ of Dysentery, viz. Dropsy, Paralysis, and Abscess of the Liver.—Intractable Diarrhœa.—Intestinal Perforation.

Gentlemen:—The year 1859 will be looked back to as remarkable for the frightful epidemic of dysentery which we have just traversed. The disease has prevailed throughout all France in a more general manner than on the occasion of previous dysenteric outbreaks; and it has not spared Paris, where for the last hundred years isolated cases only have occurred. The epidemic, exhibiting its usual features, declared itself about the end of July: it attained its maximum severity in September: by the end of October, it had moderated greatly; and though it continued during November and December, it was much less prevalent.

You have had an opportunity of studying the disease in the clinical wards; and during the last few days, you have seen in bed 5 of St. Agnes's ward, a man, and in bed 11 of St. Bernard's ward, a woman, suffering from dysentery. The man is convalescent.

The woman died: and I showed you the terrible intestinal lesions which were found on examining her body—lesions which unfortunately testified to the uselessness of therapeutic measures in similar cases. The large intestine, throughout its entire extent, presented

appearances of acute inflammation, there being also at some points ulcerations, and at others, gangrenous patches. The gangrene had in some places extended to the sub-peritoneal membrane. Traces of inflammation were found as high up as the small intestine; but let me call your attention to the remarkable fact that there was no lesion of Peyer's glands: this is contrary to what occurs in dothinenteria, in which ulceration of these glands is the anatomical character of the disease.

Here, in a few words, is this poor woman's case.

Eight days before her admission to the hospital, she was attacked by diarrhœa, the stools very soon containing blood and glairy matter. They became very frequent; and if the woman's statement is to be believed, she had had fifteen in an hour. According to the attendants, she had gone at least seven or eight times an hour, which would make the number of motions amount to 160 or 180 in the twenty-four hours. The dejections had the appearance of long-boiled flesh mixed with decolorised blood. This was the *lotura carnium* or flesh-washings described by Stoll, and by him considered as always of the worst possible augury. The general state of the patient was deplorable: the eyes were sunken, the skin was icy cold, and while it became colder and colder, it acquired a bluish tint: the tongue also was cold. Excepting that there was no change in the voice, the condition of this woman was exactly like the algidity of cholera-morbus. Pressure on the abdomen produced only slight pain. Although on the second day after the patient was admitted to our wards, the stools had diminished in frequency, the general symptoms continued quite as formidable as before. The pulse was imperceptible at the wrist, and could with difficulty be felt at the carotids. The woman died on the twelfth or thirteenth day from the beginning of the disease.

I stated, Gentlemen, that the epidemic of this year made its appearance towards the end of July, and was characterised by the usual features of epidemic dysentery. It is generally during summer, and principally during its greatest heats, that dysentery breaks out. At first, only a small number of persons are attacked; but up to September, there is a progressive increase in the number of seizures; and it is during the first fortnight of this month, that the ravages of the epidemic attain their maximum: after this, the number of new cases slowly decreases up to the end of autumn, by which time, generally speaking, the epidemic has disappeared. In some epi-

demics, however, seizures continue to occur up to January, as in the epidemic of 1765, described by Zimmermann.[1]

Of all epidemic diseases, dysentery is certainly the most severe and the most deadly. Outbreaks of dothinenteria, scarlatina, small-pox, diphtheria, and even cholera-morbus itself carry off fewer victims. Desgenettes states that dysentery killed a greater number of our soldiers between 1792 and 1815 than fell in the great battles of the Empire.[2] This we can understand, for dysentery is not only very deadly, but it breaks out as an epidemic much more frequently than other diseases, and invades particular regions at very short intervals.

What are the *causes* of epidemic dysentery? The causes of this as of most other epidemics elude our observation: though the inquiry has been pursued very carefully, nothing positive has yet been established in respect of the conditions in which it originates.

In Tours there are two barracks, one in the eastern and the other in the western faubourg: they are similarly situated, and at an equal distance from the river which flows through the town. The same hygienical system is adopted in both; and in both also, the dietary of the soldiers is exactly similar. Nevertheless, during the twenty years which preceded, and the ten years which followed, the period during which I studied at Tours, it was always in the cavalry barracks that the disease first broke out. The few soldiers belonging to infantry regiments who were seized with dysentery at the beginning of the epidemic had contracted it in hospital, whither they had been sent for other diseases: and it was not till a later period that the epidemic showed itself in the infantry barracks.

Here then is a case in which no charge can be brought against the local situation, the hygienical conditions, or the food. You are aware that it is very common to impute the causation of dysentery to the use of fruits: so general is this opinion, that one finds it rather difficult not to acquiesce in it. It is, however, a prejudice against which the greatest practitioners of former times have contended. Without going back to Alexander of Tralles, who taught that grapes and other fruits not only did not produce dysentery, but

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[1] Zimmermann:—Von der Ruhr unter dem Volke, 1765. Zurich, 1767—Traduction Française par Lefebvre de Villebrune; Paris, 1775.

[2] Desgenettes:—Notes pour servir à l'histoire de la Médecine Militaire de l'Armée d' Italie. [*Recueil de la Société de Médecine de Paris, année*, 1797, *T. II.*

were, on the contrary, really preventive, and very often curative, I shall lay before you the views on this subject of Stoll and Zimmermann, two of the most illustrious physicians of last century.

Zimmermann says:—"The majority of physicians and women-doctors [*commères*] regard fruits of the season as the true and special cause of all dysenteric attacks. It is an opinion which I have refuted in my treatise on practical experience in medicine; and the great physicians are on my side. Besides, the disease [the epidemic of 1765] appeared among our peasantry in June, when the only procurable fruit were the large cherries of Basle, and their high price placed them beyond the reach of these people: again, during the season in question, there was a great dearth of fruits. It is quite true that the unripe fruit of bad years may occasion colic, purging, as well as intestinal obstruction, and all the symptoms met with in nervous diseases; but still, no one has ever observed such a result as an epidemic of dysentery. I say, moreover, that cooling fruits even when not ripe, cannot cause dysentery."

Gentlemen, I attach no value to Zimmerman's reasons, which I join with you in condemning, as merely the echo of the humoral theories of his time; but that does not affect his clinical statement, which is quite applicable to what we are now seeing. Last year, for instance, when fruits were very abundant, there were hardly any cases of dysentery; and this season, when fruits are scarce almost everywhere, we have this formidable epidemic.

It cannot be denied that the spread of the disease is promoted by unfavorable hygienical conditions, such as hot weather, bad food, and crowding; but they are only proximate causes to which we must add another something, and that something we call the *epidemic constitution*.

We cannot otherwise explain why dysentery does not always show itself in those years in which the heat is greatest; why it does not invariably appear where there is overcrowding; and why, for example, (not to go beyond this line of argument), it so generally spares Paris, so little spared by other epidemic diseases. Therefore, as I have just been saying, we are in absolute ignorance of its primary cause.

We know, however, that when once developed, it is exceedingly contagious; although Stoll denies the contagious character of dysentery as well as of scarlatina. That both diseases, however, are contagious is evident. In small places, it is easier than in great

centres of population to trace back the disease to its source, and to follow its progress in the regions which it invades. Have not our honorable colleagues of the army of Africa, where dysentery, at intervals, commits great ravages, told us, that when it prevails in a regiment, it declares itself at every station where that regiment halts, thus following in the march of our expeditionary columns ?[1] And when from the Algerian hospitals being overcrowded some of the dysenteric patients have been sent to Marseilles, that town has become the centre of an epidemic of dysentery such as had never occurred before the arrival of these sick soldiers.

Gentlemen, before describing the *symptoms* of dysentery, I must tell you that the disease does not always assume the same forms in all epidemics. On this subject, read the accounts which have been left to us by Pringle,[2] Zimmermann, and particularly by Stoll.[3] There, you will see that the disease is sometimes purely inflammatory, and at other times rheumatic or catarrhal, for, according to the distinguished physician of Vienna, there is no difference between rheumatism and catarrh except in the seat of the disease: dysentery, he calls rheumatism or catarrh of the intestines, or abdominal coryza. The form of dysentery which generally predominates is the bilious.

At the beginning of the attack, and without appreciable cause, the patients are seized with diarrhœa; in twenty-four or forty-eight hours, the stools change their nature and aspect and become dysenteric. They contain glairy, yellowish white mucosity resembling a mixture of the white and yelk of an imperfectly cooked egg; or there is an admixture of transparent glairy matter with thin streaks of blood; or there may be an appearance which recalls that of peripneumonic sputa.

The evacuations are preceded by frequent desire to go to stool, at times almost incessant, but which result in not more than a spoonful or half a tea-spoonful being passed at any one time. They are accompanied by great pain in the anus, which sometimes extends to the bladder, producing dysuria. Tenesmus of an exceedingly painful nature is an essential characteristic of dysentery.

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[1] Haspel:—Maladies de l'Algérie: Paris, 1852. See *Dysentery* in second volume.

[2] Pringle:—Observations on the Diseases of the Army: London, 1772. [French translation, published at Paris in 1793.]

[3] Stoll:—Aphorismes et Médecine Pratique, (par Mahon, Paris, 1809).—Ratio Medendi in Nosocomio Practico Vindobonensi: Viennæ, 1783.

There is likewise colic, more or less acute, which is felt principally around the navel and in the course of the large intestine. The abdominal pain is increased on pressure, particularly in the left iliac fossa.

The tenesmus has been explained by alleging the existence of spasmodic contraction of the sphincter; but this explanation is at once refuted by examining the patients—which I have done many times in your presence—when we find that the anus, in place of being tight and closed, is sufficiently open to allow the five fingers to be introduced. The violent irritation, the acute inflammation of the intestinal mucous membrane, which is intensely red and turgid at the gaping orifice of the anus, quite accounts for the acute burning sensation felt by the patient, and for the painful constriction of the intestine, the lower sphincter of which is evidently inert and paralysed. It is not unusual for this combination of paralysis of the sphincter with turgidity of the mucous membrane, to cause prolapsus of the rectum.

Along with the glairy frothy matter of which I have been speaking, dysenteric stools likewise contain pure blood, short thin shreds of false membrane greatly resembling burst boiled rice, and which when somewhat longer and thicker, constitute that which the patients call the scrapings of the gut.

The quantity of dysenteric matter evacuated at each effort to defecate is small; but as the efforts are repeated at very short intervals, a patient may have during the twenty-four hours, as many as twenty, forty, fifty, or even two hundred stools, and thus the total amount passed from the bowels may amount within that time to two, three, four, or six litres.

It is a remarkable fact, and one specially characteristic of the malady we are now studying, that there are seen in the midst of the stools small masses of fæcal matter, which are moulded, and more or less hard: some of these masses are even scybalous, such as are passed by persons suffering from constipation. In point of fact, Gentlemen, in accordance with Stoll's correct observation, dysentery ought to be considered as one of those disorders in which the bowels are confined. So much does it differ from diarrhœa, that although, in some cases, it is complicated with iliac diarrhœa as an epiphenomenon, for the most part the diarrhœal excretions which supervene in dysentery announce the termination of the attack.

About the eighth, tenth, or fourteenth day of the disease, dys-

enteric stools are horribly fetid and contain almost no mucus: they consist of a reddish serous liquid in which float shreds resembling the débris of over-stewed meat. These *flesh-washings*, to adopt Stoll's expression, almost invariably indicate gangrene of the intestines. Then also, and even sooner, the evacuations contain pus.

Having described the nature of dysenteric stools and the local phenomena by which they are accompanied, I now come to speak of the *general symptoms*, which vary according to the particular form which dysentery assumes in different epidemics, and which may also be met with in the same epidemic.

In the *bilious* form, patients complain of loss of appetite, of a bitter taste in the mouth, of nausea, and of vomiting a greenish matter. The tongue is covered with a saburral coat. The rigors which usher in the attack are of short duration, and there is no much fever. The abdominal pains are of moderate severity. In this form of dysentery, contrary to what generally occurs, there is diarrhœa. The stools, however, though frequent, are scanty: they consist of a greenish or yellowish liquid, in which float mucous, glairy, sanguinolent matters, and sometimes blood nearly pure.

Inflammatory dysentery is characterised by burning fever, a notable frequency and hardness of pulse, heat of skin, and sometimes copious sweating. The face has a more or less bright red appearance. The tongue, in place of being saburral, is red, dry, and clean. The patients suffer from headache. The abdominal pains, violent and *torminous*, to use the consecrated term, are aggravated by the least pressure. In some individuals, the abdomen is tympanitic. The stools are few in number. As they become more frequent, the febrile excitement soon subsides.

In *rheumatic dysentery*, the abdominal pains are most marked. Each time the patient goes to stool, his sufferings are depicted on his countenance, which is expressive of the most painful anxiety; and there is extreme tenesmus.

But the chief characteristic of this form of dysentery is the occurrence of metastatic affections of the joints, as was accurately pointed out by Stoll. Sometimes, the metastatic affections are localised in one particular place; and it seems to me, that the knees are most frequently the elected situations. The articular rheumatic inflammation is generally rather transient, or at least is not severe; but sometimes it is of long duration, and of so severe a character that the great quantity of the synovial effusion causes rupture of the

capsule. The rheumatic attacks are generally erratic, seizing first one place and then another. The chest may be attacked just at the very time when the dysentery is beginning to subside: the patients complain of pleuritic or simply pleurodynic pains: others suffer from oppression, cough, and all the other symptoms of catarrh. Generally, the catarrhal or rheumatic affections yield spontaneously within a very few days.

The transformation of dysentery into rheumatism was observed by Dr. Gondouin in an epidemic which prevailed in the department of Sarthe.

When dysentery prevails in a district in which palustral fevers are endemic, it is not unusual for the accompanying fever to become intermittent, assuming the tertian or double tertian type. The *intermittent* is considered the least formidable form of dysentery.

Under all its forms, dysentery follows a regular course. Putridity and malignity come athwart that course, complicating it and leading to a fatal issue, as you saw in the case of the unfortunate woman of bed 11 St. Bernard's ward.

Algidity is its predominating characteristic. The skin becomes cold, and covered with cold sweat: the complexion becomes clay-coloured: the features are shrunken and the eyes sunken: the extremities, point of the nose, and the tongue are cold. The patient has all the appearances of an individual in the algide stage of Asiatic cholera-morbus.

He has, however, merely the appearances of cholera, and we have still only to do with dysentery; but it is hardly necessary to say that the disease really changes its nature when cholera is epidemic in a locality already a prey to dysentery. As the slightest diarrhœa gives cholera a pretext for attack, it is not surprising that cholera should strike with fury those prepared by pre-existing dysentery to receive it, and carry them off before the dysentery has had time to pass through its stages.

The most marked signs then of malignity in dysentery are algidity coincident with a feeling of great general discomfort; extreme, suddenly supervening feebleness, attended sometimes with fainting fits, and prostration to so great a degree as to render the patients almost indifferent to everything going on around them. The pulse is exceedingly weak, small, and compressible.

There are, however, dysenteric patients in whom the temperature rises in place of falling, and in whom the pulse is accelerated and

less compressible; there is burning thirst: the tongue is dry, and a fuliginous coat covers tongue and gums: aphthous ulcerations appear in the mouth.

During these dangerous periods of the disease, the stools become smaller and less frequent, acquire a fetid cadaveric odour, and contain matter resembling flesh washings. There is almost no abdominal pain. The patient complains of a sinking feeling at the præcordium, of nausea, hiccup, and vomiting.

Then also, *parotiditis* occurs as a complication. The patients complain of pain at the angle of the jaw, where, on examination, there are found swelling, redness of the skin, and a sort of deep-seated fluctuation. By pressing on the parotid region, and on the cheek in the course of Steno's duct, pus is made to issue from the orifice of that canal. The suppuration invades the surrounding cellular tissue, reaching the neck sometimes, and dissecting its muscular masses.

These symptoms announce that a fatal issue is near. Stupor comes on, complicated with slight convulsive movements, subsultus tendinum, and low delirium, death speedily closing the distressing scene.

Upon opening the body after death, the depth of the anatomical lesions perfectly account, up to a certain point, for the severity of the disease and its fatal issue. The intestinal lesions, which existed chiefly in the large intestine, were the result of violent inflammation: the mucous membrane, of a brownish deep-red, a colour derived from blood mixed with intestinal secretions, is thickened, turgid, and softened: this turgidity and thickening extended to the other tunics, and even to the subperitoneal cellular tissue. Here and there, ulcerations were observed, varying in size and depth according to the period of their commencement.

When, at its onset, dysentery strikes down individuals, the ulcerations, about the third or fourth day, are quite superficial, and covered with a muco-sanguinolent fluid: by the fifth day, they assume a very varied aspect: during the course of the second week of the disease, the mucous tunic is more or less destroyed in extent of surface and in depth, so as to expose the muscular tunic. Sometimes, even, the ulceration destroys likewise the muscular fibres and reaches the peritoneum: under such circumstances, there may occur peritoneal perforation leading to peritonitis, but this is a rare occurrence.

At other times, there is a multitude of small ulcerations, the orifices of an equal number of small abscesses formed in the submucous cellular tissue.

In other cases, or in other situations, there are seen gangrenous sloughs, completely detached at some points, and mixed with a sort of magma, a black, bloody porridgy matter, which covers the surface of the mucous membrane, and is in other places adherent to the parts whence it proceeds.

These gangrenous lesions may dissect a great part of the large intestine, so as to present an appearance of a great portion of its mucous coat being entirely destroyed.

When, from accidental causes, death does not occur till a remote period—till four or five months after the invasion of the first symptoms—and when recovery from the dysentery has taken place —the ulcerations are found to be cicatrised or nearly cicatrised; but then the cicatrices have given rise to other lesions which may have occasioned death. I refer to strictures of the intestinal tube caused by the contraction of the cicatricial tissue. These strictures explain the pains which often continue long after the disease. They explain the intestinal obstructions and occlusions, in which originate the attacks of subacute peritonitis under which the patients sink.

Buboes occur in dysentery, as in all other pestilential diseases. The mesenteric glands are swollen and inflamed, while some are in a state of suppuration.

The parenchymatous tissue of the liver, kidneys, and spleen, is softened. The gall-bladder is distended by black, pitchy, grumous bile. In some cases, there are true hepatic abscesses.

Gentlemen, I showed you a patient who at the close of an attack of dothinenteria, had had the symptoms characteristic of purulent infection. At the autopsy, as you will recollect, we found a large metastatic abscess in one of the psoæ muscles, and numerous abscesses of the same kind in lungs and liver. When speaking to you upon that case, I explained to you that my understanding of the way in which dothinenteric ulcerations become the starting point of purulent infection, is the same as in the external wounds which we see in the surgical wards, or the placental wound of the womb which occurs after delivery. I likewise told you that, in all probability, the hepatic abscesses and the articular suppurations met with at the close of an attack of dysentery, proceed from the same cause. Henceforth at autopsies, it will be necessary to search carefully for metastatic

abscesses of the lungs and kidneys, and to examine minutely the state of the veins leading from the large intestine to the liver.

Gentlemen, you will remark that I have said nothing about the lesions of the small intestine. I have not thought this necessary, because when lesions of the small intestine do occur, they are quite secondary. Spots, more or less red, and traces of existing inflammation are met with, and (as in the patient whose autopsy you witnessed), the glands of Brunner and Peyer are exempted from attack in a ratio the opposite of that met with in dothinenteria.

The disease has attacked the large intestine principally if not exclusively: let me now add, that the inflammatory lesions which I have pointed out to you are much more extensive when situated nearer the lower extremity of that part of the intestinal tube and become less and less formidable the nearer they get to the cæcum. In conclusion, dysentery is nothing more than *colitis*, but a colitis of a peculiar character, the special characteristics of which do not allow us to confound it with non-epidemic colitis—with that form, for example, of colitis which supervenes after an excessive dose of a drastic purgative, such as jalap or colocynth. Dysentery is also quite a different disease from those attacks of colitis so common in young children and old people, which occur irrespective of any epidemic constitution of the season.

To mention some symptoms only, the different kinds of colitis are characterised by sanguinolent, glairy, mucous stools, by tenesmus, which latter, however—and this is a point of differential diagnosis—is never so severe in simple colitis as in dysentery. The lesions though never so profound and extensive in the one as in the other, are of similar nature in both—they are thickening of the large intestine accompanied by turgidity, redness, and ulcerations more or less serious. But the feature which essentially distinguishes dysentery from colitis is that the latter is a disease pertaining to the individual, for the most part mild and transient, generally yielding without its being necessary to resort to treatment of any great energy; while epidemic dysentery presents that assemblage of general symptoms of peculiar character and varying severity, which I have described to you; and dysentery, moreover, when left to itself, has a tendency to become aggravated, its gravity in some epidemics being so great, that it often baffles all our therapeutic efforts.

What are the measures by which we ought to oppose this formidable disease? The importance of this question makes it in-

cumbent on me to give a certain degree of development to the reply.

Having seen at Tours, Versailles, and Paris, several epidemics of dysentery, which carried off men in the prime of age and strength, as well as old people and young children, I am able to speak, and I wish to speak, from my own personal experience. Having been entrusted by the committee on epidemics to give an account to the Academy of Medicine of the reports annually received from the departments, I have had to compare observations brought together from all sides, comparing them at the same time with observations collected by myself. Finally, in reading the accounts left to us by our predecessors, I have been able to complete my own experience by adding to it that of others, and to form, on a sound basis, opinions as to the treatment which presents the greatest prospects of success.[1]

Thirty or forty years ago, we seemed to have quite lost sight of the traditions of past centuries. Broussais had made a *tabula rasa* of everything said prior to his day, and pretended to have reestablished medicine on new foundations. Inflammation according to him was dominant everywhere, and was always of the same nature. In dysentery, he saw colitis only; and starting from that point, the treatment was necessarily antiphlogistic. Endowed with a great talent for exposition, influenced by an impetuous mind and a profound conviction of the soundness of his views, he proclaimed that no treatment except the antiphlogistic was right: his pupils "swore by their master's word," and spread his opinions everywhere, till they became accepted, without any modification, by so large a number of physicians that for a long time they dominated in medicine.

In 1823, however, Bretonneau, a man profoundly clinical, dismayed at the non-success of a system of treatment, based upon a preconceived theory rather than upon sound observation, resolved to place himself in opposition to the deplorable practice which resulted from the doctrine of the Val-de-Grace.

Having before him, as exemplified in his own practice and that of many others, the sad results of indiscriminate resort to the antiphlogistic treatment on all occasions and without reference to the form

[1] Trousseau:—Rapports sur les Epidémies qui ont régné en France, pendant l'année 1856. [Mémoires de l'Académie, Paris, 1858: T. xxii.]

of the disease, he set himself to make trial of the treatment by purgatives in accordance with the plan followed by Stoll, Zimmerman, and Pringle, all of whom stated that they had found it very useful.

The trial was attended by success. He then sought for an explanation of the successful results obtained; and he came to the conclusion that in dysentery, as in dothinenteria the *quality*, the specificity of the local inflammation, plays a much more important part than its *quantity*: he likewise thought, that most probably the beneficial action of purgatives was due to their substituting for a specific local inflammation of bad type, another inflammation which, although it has also a specific character, has a natural tendency to cease.

While in respect of Broussais' doctrine, theory took the lead, and moulded facts to its service, Bretonneau's doctrine advanced, under the simultaneous and combined support of observation and theory. From that time, and in the different circumstances in which he was placed, the illustrious physician of the hospital of Tours, recognised that the purgative treatment was that most frequently indicated in dysentery.

In the account given by Dr. H. Parmentier and me of an epidemic which prevailed in 1826 in the department of Indre-et-Loire, you will find it stated that a really great proportion of recoveries followed the treatment just described.[1] I have long employed it; and it has rendered me signal services in the different epidemics against which I have had to contend.

Such was the case in the epidemic of 1848 in the garrison of Versailles, whither I went every morning to study the disease in the wards of the military hospital, then in charge of my honourable colleagues Drs. Perrier, Follet, and Godard.

In the reports communicated to the Academy of Medicine, to which I have just been alluding, there is expressed an almost unanimous opinion in favour of this powerful method of treatment. Nearly all the reporters state that the administration of purgatives was the chief means by which they opposed the disease; and that the purgatives which they principally used were the neutral salts, such

[1] Trousseau et Parmentier:—Mémoire sur une Epidémie de Dysenterie qui regna dans le départe-d'Indre-et-Loire. [*Archives Générales de Médecine pour l'année* 1827.]

as sulphate of soda, sulphate of magnesia, and the neutral tartrate of potash and soda, called *sel de Seignette*.

These are the medicines which you have seen me prescribe in the cases which have come under your observation. In my civil practice, I always have recourse to them, particularly in the commune in which my estate is situated, where this year dysentery has committed great ravages. My own household was not spared, several members having been attacked, and one child having died. My farm-bailiff was seized with the malady: I gave him the neutral salts; and though he committed imprudences, he recovered. Generally persons recover who are treated in this way, while those who neglect to call in medical aid, or are very late in doing so, and who consequently are not actively treated, either die or continue deplorable invalids for six weeks or two months.

The evacuant method praised by the physicians of last century, and particularly the administration of the neutral salts in purgative doses once daily, or morning and evening, so as to induce diarrhœa, is, therefore, the best treatment of dysentery.

Does it follow that we are to confine ourselves to the use of the sulphates of soda and magnesia, and the salts of Seignette? Certainly not: there are cases in which other purgatives may be employed with advantage.

In 1812, there was dysentery at Gibraltar; numerous deaths from it had occurred, when Dr. Amiel, surgeon-major of the 12th regiment of infantry of the English army, conceived the idea of having recourse to sublimed calomel. This he gave in doses of one gramme, eighty centigrammes [27 grains] morning and evening till the evacuation ceased to be mucous and sanguinolent, and had assumed a deep red colour: the dose was then reduced; and afterwards, the calomel was discontinued, when lavements were used in its place. So great was the success of this treatment, that the director-general of the military medical service made obligatory its employment by all the other physicians.

In the epidemic of Touraine, which I spoke of a minute or two ago, Bretonneau and I tried this plan of treatment, and obtained similar results. We were, however, obliged to abandon it, on account of the salivation it occasioned in some patients, a complication from which the Gibraltar patients were exempt. This difference arose from the Gibraltar epidemic having occurred during the hot weather, and in a place where the temperature is naturally very high,

so that the patients ran no risk of chills: at Tours, on the other hand, at the time we gave the calomel, the bad weather was setting in, and the patients being obliged to pass several hours on the stool [*sur leur chaise percée*], were exposed to chills which favoured the toxic effects of the mercury.

How does the calomel act? Is its action exclusively topical and substitutive, like that of the neutral salts? Or, is it more general, and does the benefit derived from this medicine depend on its action as an alterative? These are difficult questions to answer. I should, however, be rather inclined to adopt the former of the two explanations, and to accord only a very slight share in the beneficial results to its alterative powers, when I consider that calomel is never so useful as when administered internally, and that I have never heard it said (except by Boag as quoted by Gmelin),[1] that mercurial frictions of the skin are of any use.

Calomel was also the basis of the treatment of Dr. Leclerc, but our colleague of Tours in place of giving it in large doses, administered it at first in fractional quantities, that is to say in doses of one centigramme [$\frac{1}{7}$th of a grain] morning and evening, afterwards increasing the quantity by an additional centigramme on succeeding days. Simultaneously, and with a view to moderate the tenesmus M. Leclerc prescribes inunction of the abdomen with an ointment of belladonna.

I have often had recourse to and have observed the good effects of these inunctions. Adopting at the same time the medication of MM. Amiel and Leclerc in a modified form, I have given calomel *fracta dosi* according to Law's method, that is to say, in doses of five centigrammes divided into ten packets, one of which was administered every hour.

This method has appeared to me particularly advantageous in the treatment of dysentery in children, as it is very difficult to get them to take saline purgatives. A similar remark applies to the purgatives to which it is necessary to add rhubarb, a combination in favour with some excellent physicians.

I have now to speak to you of *emetics*, which occupy an important place in the evacuant method of treatment, as applied to dysentery.

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[1] Gmelin:—in Murray's Apparatus Medicaminum, [Pars II]: Gottingæ, 1793.

About the middle of the seventeenth century, Piso, the botanist, having, when in the Brazils, heard the praises of a root which was administered in powder, endeavoured to introduce it as a medicine;[1] but the medical profession hardly paid any attention to his writings. It was in vain that Legros who had made three voyages to America, brought a supply to France, and offered for sale "ipecacuan"—for that was the name of the wonderful plant. The new remedy received no credit save from the ranks of quackery. In 1686, nearly, in fact, at the date at which cinchona, the famous remedy of Talbot, had procured for its discoverer the patronage of Louis XIV and a large fortune, a French merchant, named Grenier, imported from the Brazils 75 kilogrammes [between 150 and 160 pounds] of the root of ipecacuan. Not knowing how to turn it to account, nor how to give celebrity to his new medicine, he assumed as a partner Adrian Helvetius, a Dutch physician practising in Paris, whom he made acquainted with the antidysenteric virtues of his arcanum. Helvetius made his first experiments upon obscure persons, then upon persons higher in the social scale, and finally upon the Dauphin himself, whom he cured of a sanguineous flux: he then obtained permission from the King to make public experiments at the Hotel-Dieu. His experiments having succeeded, he obtained a monopoly of the sale of his remedy, besides a money grant of a thousand pounds. Helvetius, however, acting the part of an unscrupulous partner, kept to himself all the honour and profit: Grenier then tried to be reinstated in his rights, and with that object instituted in the parliament a suit, which he lost. Grenier, indignant at the bad faith of Helvetius, divulged the secret; and from that time ipecacuan became public property. Afterwards, by one of those reactions so common in the history of opinion, a tendency arose to abuse the remedy which had had so much trouble in making itself at all accepted.

The utility of ipecacuan in dysentery is, however, incontestible; it is chiefly beneficial in the bilious form, at the beginning of the attack, when the coated tongue indicates a very marked saburral state. It acts, on the same principle as purgatives, as a powerful modifier, and its action is equally beneficial on the entire digestive canal as on the stomach.

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[1] Piso:—De Medicina Brasiliensi; et Historia Rerum Naturalium Brasiliæ. Lugduni Batav., 1648.

To sum up :—here is the plan I generally adopt in the treatment of epidemic dysentery ! At the beginning of the attack, I prescribe ipecacuan in emetic doses, according to the formula which I have given you so often :—three grammes [46½ grains] are divided into four powders, one of which is taken every ten minutes till vomiting is induced. Next day, and often even on the evening of the same day in which the ipecacuan has been thus administered, I give one of the neutral salts in a dose of from 15 to 25 grammes [231½ to 386 grains] which ought to be repeated during the following twenty-four hours. I go on giving the saline medicine till there is an obvious modification in the nature of the stools, or in other words, till they cease to contain glairy sanguinolent matter and become diarrhœal.

But concurrently with the use of the means now described, I attack the disease by topical agents, which have a still more direct action on the affected parts. I use styptic and caustic lavements with sulphate of zinc, sulphate of copper and nitrate of silver. For a child, I use nitrate of silver in the proportion of from 5 to 10 centigrammes [¾ of a grain to 1½ grain] of the nitrate to 125 grammes [4½ fluid ounces of water : for an adult the proportions are from 20 to 75 centigrammes [3 to 11½ grains to 200 grammes [7 fluid ounces] of water. The sulphates of copper and zinc are used in the proportions of about 5 centigrammes [¾ of a grain] for a child and one gramme for an adult. The lavements are repeated two or three times in the twenty-four hours. They ought to be retained within the bowel as long as possible : to promote this object a lavement of pure water ought in the first instance to be administered, and then the medicated lavement must be slowly injected.

Lavements of the acetate of lead have been recommended, and I have employed them : without inducing any toxic effects, I have used a solution of from 30 to 60 grammes [460 to 920 grains] of acetate of lead to a litre [rather more than 35 fluid ounces] of distilled water.

Gentlemen, you will be surprised that hitherto I have said nothing of opium, which in the opinion of some physicians seems to be a remedy essential in the treatment of dysentery. I have only to mention it that I may raise my voice against the lamentable manner in which it is too often abused ; and I shall recapitulate what I said at length on that point in my lectures on diarrhœa.

When opium is indicated it is not for the purpose of stopping the dysenteric flux, but for moderating the accompanying pains and

particularly for checking the vomiting which renders the administration of other medicines impossible. In all such cases, the opium must be given in very small doses, beginning with one drop of the laudanum of Sydenham, which may be repeated every hour according to the persistence of the symptoms for which it is administered: the doses of opium must be small, for by giving large doses, the malady will become complicated by formidable typhoid symptoms.

There is another point in the treatment of dysentery upon which I must make some remarks. Every day, you hear me prescribe soups for our patients, even for those who are in a very bad state: you observe that I insist upon their taking three or four times a day a small quantity of thick panada. As a tisane, I order barley-water, rice-water, albuminous water,[1] or the white decoction of Sydenham, which is simply a form of toast and water. To this practice I attach extreme importance. In dysentery, as in typhoid fever, I look upon alimentation as a matter of absolute necessity; and this opinion has been confirmed by long experience.

You thus understand, Gentlemen, that I abstain from antiphlogistic treatment because it would be completely opposed to my alimenting the patients, which I regard as an imperative indication. It is only when the predominating symptoms are of a purely inflammatory nature that the application of leeches is right: such cases are unusual; but when they do occur, they ought without delay to be met as I have stated.

The treatment which I have recommended to you, based on my own practice and on the experience of numerous physicians, though that on which we ought to rely, is unfortunately not infallible, and is much less successful in some epidemics than in others.

In conclusion, I repeat, that dysentery is the most formidable and dangerous of all epidemic diseases. Even when patients have resisted its first assaults, and seem to be reaching convalescence, danger is not past, and there are evil consequences to be dreaded after the disease.

I do not now speak of the dropsical affections of a more or less general nature, or of the paralytic seizures which supervene during the course of the disease, such as supervene in the course of serious fevers, in dothinenteria, for example, which profoundly implicate the whole economy. However alarming these complications may be,

[1] See p. 136.

they can be got rid of by tonic regimen, restorative diet, and hygienical care. Nor do I speak of purulent infection, or of hepatitis with abscess of the liver, which, though rare, have nevertheless been noted among the sequelæ of dysentery.

I speak of intractable diarrhœa caused and kept up by lesions, more or less deep-seated and more or less extensive, of the large intestine, lesions which are always accompanied by an inflammation, an irritation, which makes itself felt throughout the rest of the intestinal canal, disturbing its functions, exhausting the strength of the patients, and causing them to sink with every symptom of hectic fever, against which all therapeutic measures are unavailing.

Finally, the intestinal adhesions may lead to *perforations*, as I stated when describing the pathological anatomy of dysentery. They may occur at a period more or less remote, giving rise to rapidly mortal peritonitis. Attacks of peritonitis may also originate in *intestinal obstruction*, caused by the contraction of cicatricial tissue bringing the walls of the tube into mutual proximity, so diminishing its calibre, and constituting stricture.

LECTURE LXXV.

CONSTIPATION.

Constipation is not necessarily a state of impaired health.—Causes. Treatment: Influence of Will and Habit: Cold Lavements: Suppositories of cacao-nut butter, soap, and hardened honey: Mucilaginous Lavements: Belladonna, with or without small doses of Castor-Oil.—In Obstinate Constipation have recourse to Drastic Purgatives.—Hygienical Measures: Regimen: Bran-bread.

Gentlemen:—I have already, when speaking of dyspepsia, made a few remarks regarding constipation: but the subject is one which merits being treated at greater length; and, moreover, I ought to state to you the reasons which induce me to treat by means so very different, a symptom which, in all patients, seems identical.

For the present, I exclude from consideration, mechanical obstacles to the passage of the fæces. I exclude tumours, and physical obstacles, using the word constipation in its ordinary meaning. I consider that constipation exists whenever the stools are few in number, irrespective of any mechanical impediment to the passage of the fæcal matter.

You must bear in mind, Gentlemen, that in certain persons constipation is not an infirmity—that it is a state of the system—that unless it go beyond certain limits, it cannot be looked upon as a disease.

When you recollect that there exists in the stools, in addition to the residuum of the aliment, a large quantity of juices secreted by the salivary glands, liver, pancreas and glands situated in the intestinal mucous membrane, you will understand that these juices may vary infinitely in quantity, not only in respect of the nature of the food and drink, but also in respect of the idiosynerasies of the individual. You do not say that a man is in a state of disease because

he perspires very little; and you have no more right to say so, because his digestive apparatus is in an analogous condition.

Although, as a rule, every adult man ought to have a stool daily, there are some persons, who, from the peculiarity I have just mentioned, have an alvine evacuation only once in two or three days, and in whom constipation belongs to a state of health. So true is this, that should the individuals of whom I speak have a non-diarrhœal stool every day, they will experience pains in the bowels, borborygmi, a feeling of debility and general discomfort, precisely similar to the effects produced on other people by diarrhœa. The individual who is physiologically constipated—if I may use so incorrect an expression—has relatively diarrhœa when he has daily a moulded motion.

The contents of the intestines pass onwards in virtue of the peristaltic movement, and in no part of the canal is that movement more energetic than in the small intestine: in the large intestine, it is slower, or at least less efficacious, and the contractions easily exhaust themselves by acting on the fæces accumulated in the rectum, and on the sphincter. We can any day appreciate these effects, when we resist the sensation by which we are apprised of a need to empty the bowel. We can generally accomplish this without difficulty, provided there be no excessive accumulation in the rectum.

Habitual resistance of the peristaltic movement ends by enfeebling the excitability of the intestine, which exhausts itself in superfluous efforts, and becomes expended like all the other muscles; and which becomes so distended by gaseous and other contents, that the muscular tunic loses its contractile power just as do all hollow muscles when stretched beyond their normal distensibility.

However, the continual contact of fæcal matter with the extremity of the intestine impairs the sensibility of the mucous and muscular coats, and the synergic contraction of the upper portions of the large intestine either does not take place, or takes place in a most inefficacious manner.

Gentlemen, I presume that you understand this mechanism. In the normal state, whenever you, in any way, irritate the lower portions of the rectum, you excite, in addition to the immediate contraction of the muscular coat of that portion of intestine, synergic contraction of the portions situated above, and throughout the whole intestinal canal upwards even to the stomach, there being produced by

the augmented peristaltic motion: the entire contents of the intestines are propelled downwards, and there is thus established a state of diarrhœa. You see then that a solidarity exists between all the portions of the alimentary canal, a solidarity both in respect of excess and deficiency of action.

Here then, it is sluggishness of the intestine, originating in and maintained by bad habits, which is the cause of the constipation. We shall afterwards see, when we come to speak of treatment, that the will, so powerful in causing the evil, is equally powerful in remedying it.

It is not fæcal matter only which is accumulated in the large intestine: the gaseous contents play a not less active part, and contribute not less powerfully to destroy the elasticity of the muscular coat of the intestine.

This new anatomical condition, which in youth, and even in adult age, is so frequently the result of carelessness on the part of the patients, becomes in some degree a natural state at a more advanced period of life; for, with increasing years, the intestinal muscular tunic loses its tone, just as do the vesical muscular tunic, and certain muscles of organic life, those of the lungs for example, which allow themselves to be distended so as to cause pulmonary emphysema. In the same way, constipation depending on dilatation of the large intestine is not an accident, but, in a certain sense, a normal state in old people.

Thus, Gentlemen, habitual distension of the large intestine leads to its muscular atony, in consequence of which the fæcal matter does not easily proceed onward, and to a certain extent may be said only to make way from the pressure of the new accumulations behind: this atony is unquestionably the cause which most certainly produces constipation. But the rectum is certainly the portion of the large intestine which is most essential to defecation. Provided with powerful fibres, strongly contractile, supplied with numerous nerves, and terminated by the anus, which is endowed with exquisite sensibility, this intestine cannot be normally filled with stercoral matter without having its contractility aroused, without trying to get rid of its contents. But when, with old age, the sensibility becomes blunted, and the muscular contractility enfeebled; or when the individual by obstinately retaining the fæcal matter dulls sensibility, and accustoms the intestinal muscles to a state of constant distension, there is formed that dilatation of the rectum, that pouch, to which the term

ampoule rectale, has been applied. There, the fæces accumulate, and become agglutinated so as to form enormous boluses pressing on the anus, which are inexpulsable except by real parturient travail or by surgical intervention. This kind of constipation is more common than young practitioners suppose; and there is this difficulty in recognising it, that it is sometimes accompanied by a diarrhœal flux depending upon two causes, viz. the local irritation excited by the presence of the excremental bolus, and the excessive contraction of the colon synergically induced by the irritation of the rectum—a form of diarrhœa belonging to the class of diarrhœal affections due to the excitation of the lower part of the intestinal canal, and which we have already studied together in detail.[1]

Although the muscular tunic of the alimentary canal may be regarded as the chief agent in pushing onwards the fæcal matter to the colon—although in the child, and even in the adolescent, it is almost the sole agent in defecation, in the sense that no other agency is required for emptying the intestine—this is not the case in old people, and in persons habitually constipated. I may add indeed, that in general, after getting beyond the age of maturity, it is so no longer.

The assistance of the expiratory muscles is then required. Now, Gentlemen, these muscles are under certain circumstances liable to become enfeebled, which renders their assisting efforts in a great measure ineffieacious. I am not speaking at present of senile debility which has in the first instance suggested itself to you: I speak of the debility consequent upon repeated pregnancies. When the abdominal walls have been often distended by the product of conception they become extraordinarily flaccid, and unfitted to cooperate efficiently in the expulsatory efforts of defecation. There is a still stronger reason for this being the case when eventration exists. The same remark is applicable to hernia, which makes it to some extent a risk for the patient to strain energetically. In the latter case, the muscular power is intact, but the will restrains it from being called into operation. It is evident that practically a similar state of matters exists when the muscular efforts cannot be made without exciting violent pain: this occurs in rheumatism of the abdominal walls and diaphragm, and in painful affections of the abdomen: it occurs in those who suffer from piles, in those who have fissure of the anus and whose bowels cannot be evacuated except at the

[1] See p. 105 of this volume.

cost of intolerable pain. These persons restrain the expulsatory action of the abdominal muscles, allowing the peristaltic action of the large intestine to accomplish nearly unaided the process of defecation. You perceive, Gentlemen, how all these causes, like the will, act in producing constipation.

The diseases of the uterus and its annexes have a complex etiological action. If acute pain exist, as in metritis or in utero-pelvic phlegmon, the retention of the fæcal matter is caused by a mechanism analogous to that which we have just been studying: the patient abstains from going regularly to stool because he is afraid of going, and ultimately he becomes habitually constipated. It is so likewise when there exists great prolapsus of the womb, which is always aggravated by the efforts of defecation, and which induces the woman to restrain the muscular efforts as much as she can. In extreme anteversion, and still more in retroversion, constipation is produced by a particular mechanism. The pressure exerted upon the rectum, which is flattened by being squeezed against the cavity of the sacrum, prevents the contents from escaping through the sphincter of O'Beirne, and the accumulation takes place in the horizontal portion of the sigmoid flexure of the colon. Now, in defecation, the colon acts with less power than the rectum, the contractile power of which is great: on the other hand, the matter accumulated in the colon does not provoke contraction of the rectum in the same way as matter immediately above the sphincter.

While great displacement of the uterus is a very effective agent in producing constipation, constipation will itself augment the displacement.

Reconsider, Gentlemen, what I have now been saying. Suppose that the sigmoid flexure of the colon is filled with hard matter, and you will at once understand how it rests upon the floor formed by the anterior or posterior surface of the uterus, and how the muscular effort itself will augment the displacement and press the womb still more against the sacrum, and so render more formidable the obstacle to be overcome. Thus you see how it is, that constipation is so obstinate and troublesome in women whose condition is such as I have now described. For them, there is, in addition to the physical impediment, a sluggishness of the intestine, resulting from voluntary retention of the fæces, retention which is instinctively adopted by women to escape the pain and inconveniences which follow attempts to defecate.

The nature of the food and drink, and the sort of life which is led, have a remarkable effect in producing constipation: but in respect of these matters, the physician has no other guide than the idiosyncrasy of each individual. Speaking generally, however, we know that great abstemiousness, and a sedentary mode of life, are great predisposing causes. It is as unusual for great eaters as for persons who take a great deal of exercise to be constipated. It can also be shown that an exclusively animal diet predisposes to constipation, while the use of green vegetables and fruits produces rather an opposite tendency.

Gentlemen, the remarks which I have made upon the conditions which give rise to constipation ought already to have suggested to your minds some therapeutical notions. You must have already seen that, although in many cases the measures employed to counteract this infirmity are necessarily inefficacious, or at least only palliative, there are others by which immediate and durable success is obtained.

I have pointed out how constipation is produced by the habit of retaining the fæces; and in speaking of dyspepsia associated with constipation, I entered into some of the details of this subject.[1] It must be stated—for it is a fact—that when constipation is not constitutionally inherent in the individual (which as I have shown you is sometimes the case), *the will, patiently and regularly applied, will often triumph over this infirmity*. It is necessary that the individual go daily at the same hour to the water-closet. It is also necessary that for a considerable time he make powerful defecatory efforts: should these efforts be unsuccessful, he must wait till the following day, even though he should previously experience a desire to go. If on the second day, after a new attempt, there is no evacuation, a lavement must be taken immediately—not a lavement of tepid water, but, in the first instance, one of water with the chill off, and then one of cold water. On the following day, similar measures must be renewed, and repeated next day, should they have been unsuccessful—a second cold lavement must then be administered, should no stool have been obtained. The daily repetition of the attempt at the same hour to defecate, ends by causing a daily need to go to stool at that time: it seldom happens that persons who patiently pursue the manœuvres I have now described for eight or ten days do not ultimately obtain a daily motion.

[1] See p. 50 of this volume.

There are, however, local adjuvants of some utility. I have spoken to you of the use of clysters of water with the chill off, followed by clysters of cold water. I have now to mention *suppositories*, which are more easily employed than clysters, particularly by men. In many cases, suppositories of cocao-nut oil suffice: soap suppositories have a more sure and energetic action: and those made of honey hardened by heat are still more efficacious. A suppository of hardened honey ought to be in shape and volume nearly like a pigeon's egg. When it has been slightly moistened, it can be introduced into the rectum with great ease; and there are few cases in which it will not rapidly produce an evacuation. Quite understand, that I am decidedly opposed to the use both of clysters and suppositories, till energetic and fruitless efforts at defecation have been made on two successive days.

I must not, however, omit to mention, that the time of day at which the patient goes to the water-closet is a matter of considerable importance. The morning is certainly the most favorable time; one is then less in a bustle—on getting up one can devote more time to the water-closet than is possible during the course of the day. There are also other reasons of convenience in favour of the morning, which I cannot and do not wish here to set forth; but you can understand what they are.

It is worthy of remark, however, and the observation has been made by every one for himself, that immediately after a meal there is felt a somewhat urgent call to empty the large intestine. Perhaps the accumulation of food tends in a somewhat mechanical manner to expell the delayed residuum: or perhaps—and this explanation is the most reasonable—the renewal of digestion rouses throughout the whole alimentary canal a preparatory muscular action.

It is not only true that the best chosen time for going to stool is immediately after a repast, and particularly after the most ample meal of the day; but then also is the time when the local adjuvant means which I have pointed out are most advantageously employed.

It is evident, Gentlemen, that irritant suppositories and even clysters cannot be employed without seriously disturbing digestion.

Before leaving the subject of clysters, I have still something to add. We have seen that a deficiency in the intestinal secretions has a great influence in producing constipation; and you can understand that by injecting into the rectum strongly mucilaginous fluids,

such as infusion of linseed, decoction of marsh-mallows, or white of egg, the excrementitial bolus, and the mucous membrane of the intestine will both be lubricated, so as to allow the former to glide more easily over the latter.

When the use of irritant clysters is indicated, it is advisable, in the first instance, to try the emollient enemata of which I have been speaking.

Regimen is a matter of great importance. The surest plan to get the better of constipation is to make vegetable predominate over animal diet, to such an extent as the aptitudes of the stomach will permit. Herbaceous vegetables and fruits ought to take the first place in this regimen.

But, Gentlemen, it is not easy to avoid going beyond or falling short of our aim. To produce diarrhœa is not to cure constipation, and is only substituting one disease for another. In respect of the vegetable diet, of the efficacy of which I have been speaking so favorably, it will only be useful if it be well borne.

Certain kinds of aliment derived from the animal kingdom, such as milk-food, have a slightly laxative effect upon some individuals. Milk-food, may, therefore, be given, whenever it has an aperient effect, without causing indigestion. Many persons find coffee with milk and others find tea powerful correctives of constipation.

Of drinks, beer and cider are most suited to persons of constipated habit. I may add, that I know many persons who, if they drink a tumbler of cold water in the morning fasting, are certain immediately afterwards to require to go to stool.

It would be difficult for me, Gentlemen, to explain the mode of action of what is called bran-bread, a kind of bread made of three parts of flour, and one of coarse bran. I very often prescribe it: the patients eat it in place of ordinary bread, and in general the regular action of the bowels is greatly facilitated by its use.

We shall see immediately that belladonna is one of the most generally successful remedies for constipation: and you can thus at once see by recollecting the similarity of the properties of belladonna and tobacco how it is that many men cannot go to stool unless they smoke a pipe or a cigar immediately after a meal. Although, at least in our country, it is not considered very proper for women to smoke, I almost every week advise ladies to try the effect of smoking a tobacco cigarette, to aid in overcoming constipation which had proved inveterate under every hygienical treatment.

Following the example of Bretonneau, I constantly prescribe belladonna in constipation. I give it in the form of pills, each pill containing a centigramme of the extract, and as much of the powder of belladonna. One of these pills is taken daily, fasting, by preference in the morning on empty stomach, rather than in the evening. The number of pills may be increased from one daily to two daily within the first five or six days: they ought seldom to exceed four or five in the course of the 24 hours. Whatever number of pills are taken, they ought always to be taken at one time. I cannot tell you the manner in which they act. I can assert, however, that the majority of the patients who have perseveringly though fruitlessly followed the different counsels of which I have spoken to you, have at last obtained a satisfactory stool daily with the aid of belladonna. As soon as the stools become regular, the belladonna must be discontinued, and the organs be allowed to act without assistance.

Should the use of the belladonna prove unavailing, a teaspoonful of castor oil may be given with it: and to avoid disgusting the patient, this small dose of the oil may be administered given in a gelatinous capsule. The intestine, prepared by the belladonna, yields to the purgative influence of the castor oil, which may be repeated twice a week if required. By and by, both the laxative medicine and the belladonna may be discontinued. It is important not to go on using them too long, as that might lead to loss of appetite, and under insufficient alimentation, the constipation would return.

But, Gentlemen, it will often happen that the constipation will resist the series of measures which I have pointed out. It then becomes necessary to have recourse to purgatives—extreme remedies, useful remedies, and indeed remedies which are indispensable, requiring, however, to be managed with certain precautions and with great prudence.

In general, the saline purgatives ought not to be employed. They have a rapid, almost instantaneous action, which, however, is not durable. After they have been used, the intestinal secretions, temporarily augmented, become dried up to some extent, just as the application of certain sapid salts to the mucous membrane of the mouth, after causing a profuse flow of saliva leaves a parched state of the mouth and thirst, proportionate to the intensity of the original effect.

For some years past, a remedy, which has taken the name of vegetable calomel, has been much used in England. I refer to *podophyllin*, the active principle of the *podophyllum peltatum*. It is a very active medicine. I prescribe it in the form of pills, each pill containing one centigramme [$\frac{1}{7}$ of a grain] of podophyllin, and the same quantity of extract of belladonna. One, two, or three of these pills may be given, morning or evening, fasting. The result is one or two easy stools unattended by colic or heat in the stomach.

Generally, it is necessary to have recourse to the purgatives which are called *drastic*—particularly to aloes, extract of colocynth, gamboge, and extract of rhubarb. These are the substances which enter into the composition of all the purgative pills so much used by our English neighbours. I use the following formula:

Aloes . . .	of each 1 gramme, [15½ grains].
Extract of Colocynth	
Extract of Rhubarb .	
Gamboge . . .	
Extract of Henbane .	25 centigrammes [nearly 4 grains].
Essential Oil of Anise	2 drops.

To be made into a mass, and divided into 20 pills, which are to be silvered.

The patient is to take, *always in one dose*, every second or third day, from one to three of these pills, the number of the pills for a dose being proportionate to the purgative effect produced. They ought to produce an easy and natural, or semi-diarrhœal evacuation.

The time at which these pills ought to be taken is not the same with all patients. Generally, it is best to give them at the beginning of the evening meal. In some persons, however, they produce a sort of indigestion, or act so quickly as to disturb sleep by causing evacuations during the night. When the pills act too rapidly, it is better to administer them to the patient in the morning fasting, or at the first meal in the morning. On the other hand, when they are slow in producing an effect, they should be given at the evening repast; or, if their administration at that time cause indigestion, let them be taken at bedtime, when the result will be a stool next morning.

You observe that I add henbane and oil of anise to the purgative ingredients of these pills. These additions, recommended by many English practitioners, are very useful: they prevent griping, and the henbane, in addition to its anodyne properties, exerts a beneficial

influence, similar to that produced by belladonna and other active plants of the family solaneæ. Some prefer to give rhubarb in powder, immediately before dinner, in doses of from forty to sixty centigrammes [6 to 9 grains] and upwards. Whatever may be the influence of these purgatives, they ought never to be resorted to till the other means regarding which I have spoken at length have completely failed. The use of these pills is certainly less injurious than is generally supposed; and the abuse of them in England shows that we, on this side of the Channel, are inclined to exaggerate their evil effects. But it is not the less true, that regularity in obtaining relief from the bowels obtained by the observance of hygienical rules, by good and suitable food, and by habit, is always, in the end, preferable to that procured by artificial means.

Before leaving the subject of the treatment of constipation, let me refer to the application of *cold to the abdomen*, a minor method which I have seen recommended, and have myself prescribed, with astonishing success. On rising in the morning, let there be placed on the naked abdomen a compress of several folds soaked in cold water, and let it be separated from the clothes by a sheet of gutta percha or caoutchouc. This compress ought to remain on for three or four hours.

LECTURE LXXVI.

FISSURE OF THE ANUS.

Treatment by Rhatany.—Constriction of the Sphincter of the Anus is the Effect and not the Cause of Fissure.—Fissure is very common in Women Recently Delivered: why it is so.—The Curative Effect of Rhatany depends on its modifying the character of the ulcerated surfaces, and tonifying the parts.—Its action ought to be promoted by Belladonna, which is a remedy for constipation.—When Rhatany fails, recourse must be had to a Surgical Operation; that which seems the best is Forcible Dilatation.

Gentlemen:—That small portion of St. Bernard's ward which we reserve for nurses affords us frequent opportunities of observing an affection which, though apparently insignificant in respect of danger, is a source of great misery to the patient: I refer to fissure of the anus.

The history of this affection belongs rather to clinical surgery than to clinical medicine. I cannot, nevertheless, pass unnoticed the numerous cases which daily present themselves to your observation; and I feel the more bound to call your attention to them, that one of my plans of treatment which I have long used successfully, is purely medical, if I may so express myself, and has not been sufficiently appreciated by surgeons. It consists in using clysters containing extract and tincture of rhatany.

The fissure or chap in the anus, which has been justly compared to cracked lips resulting from exposure to cold, consists of small, narrow elongated ulcers situated between the stellate folds of the fundament. Women are much more subject to these fissures than men: and they are of far the most frequent occurrence in women who have been recently delivered. I shall tell you why it is so.

From the extreme frequency of this affection, it might be supposed that it has been known from very remote times: but my honourable colleague Professor Velpeau correctly wrote in 1838, that not more than twenty years had elapsed since fissure of the anus was first described as a distinct malady.

Boyer, who was the first to describe this affection in detail, advanced a theory in explanation of the mechanism of its production, and upon that theory based the plan of treatment which he adopted.

He rested his opinion upon the fact, that he had never seen fissures unaccompanied by constriction of the sphincter of the anus, and that he had also several times observed all the symptoms characteristic of fissure without finding anything more than stricture: and also from the fact that section of the sphincter, even without touching the ulcers, immediately afforded relief, Boyer concluded that stricture is the sole cause of fissure. He said, that the anal orifice is closed at the time of defæcation by energetic spasmodic contraction of the anal orifice, and that the solid contents of the bowel, by forcing a passage against that impediment, cause tearing of the parts. Fissure in his opinion is only a complication, or an accessory, of the disease; and he thought that the only treatment required for the immediate cure of stricture and fissure was relaxation of the spasmodic stricture by section of the muscular fibres.

At the present time, a few surgeons hold Boyer's view, that the fissure is in itself of little importance, and that the preponderance of pathological importance belongs to the stricture; but generally, the only anxiety is to find means wherewith to modify the ulceration either by converting the wound, by an incision, into a simple wound, or by employing detergents, caustics, and the various ointments used in the treatment of obstinate ulcers in other situations.

The treatment which you see me employ is founded upon this principle. The chief efficacy of rhatany depends on the modifying influence which it exerts upon the morbid surfaces: but it possesses, in virtue of principles which it contains, the additional advantage of increasing the tonicity of the mucous membrane of the intestine, and subjacent cellular network, which enables the parts to offer a more effectual resistance to the distending power of the excrementitial bolus, so that the solution of continuity not being torn afresh every day, is enabled to undergo natural cicatrisation.

You perceive, Gentlemen, that so far am I from being in dread of

this constriction of the sphincter, that I am not afraid to employ astringent medicines calculated to increase the stricture. The theory which I have formed from numerous cases to explain the treatment I recommend, is to my mind quite satisfactory. The therapeutic method, however, is not mine: I got it from Bretonneau, to whom the healing art is indebted for so many means of cure.

Let us attend to the considerations upon which the illustrious physician of Tours founded the use of rhatany in the treatment of fissure of the anus, and how he was led to adopt it.

While on the one hand, constipation, and the expulsive effort which pressing the excrementitial bolus against the sphincter, distending and very often tearing it, are evidently in a number of cases the causes of fissure; on the other hand, constipation is the greatest obstacle in the way of a cure. Constipation is very often accompanied by a most remarkable structural change in the lower part of the rectum. Immediately above the sphincter, the rectum dilates into a sort of pouch, and again becomes contracted at the sacro-vertebral angle. In the pouch referred to, the fæces accumulate so as to form a very large ball; and every time the patient goes to stool, the expulsive effort is really like the straining of a parturient woman. In Bretonneau's opinion, whether the constipation is or is not associated with fissure, it is good practice to give to the lower portion of the intestine the tone in which it is deficient; and for this purpose rhatany seemed to him exceedingly well adapted. In cases of simple constipation, coincident with dilatation of the rectum, he was in the habit of giving lavements consisting of water holding in solution extract and alcoholic tincture of rhatany.

A lady treated by him had, along with the constipation of which I am speaking, fissure of the anus, which occasioned dreadful pain and seriously affected the health. He ordered her to have daily a quarter lavement of rhatany; and the result was a speedy cure both of constipation and fissure. Other patients presented themselves, suffering from constipation and affected likewise with spasmodic stricture of the rectum and fissure. The same treatment which was pursued in the case of the lady cured all these morbid conditions in them. He then thought that notwithstanding the existence of constipation, a symptom absent in some cases of fissure, rhatany might be employed, and the trial was crowned with success similar to that obtained in the other cases. By means of very legitimate induction, he accomplished the first step, and then facts to which he did not

appeal awakened his attention: by simply verifying them, and pursuing a course of rational experiment, he was led to adopt a treatment which perhaps may not be "rational," but which is exceedingly good; and that is the principal consideration.

In point of fact, Gentlemen, this plan of treatment would be truly rational, if in accordance with Bretonneau's view, constipation was always the cause or always a complication of fissure. But not unfrequently we meet with diarrhœa or soft stools in patients suffering from fissure of the anus: and we also find fissure in those who take clysters morning and evening to prevent pressure against the sphincter in defæcation. When the state of constipation is very great, rhatany is by itself inadequate to accomplish a cure; and it then becomes necessary to aid its action by administering a laxative, so as to prevent tearing, by facilitating the passage of the fæces through the anal orifice. Bretonneau's treatment always gave exceedingly good results in his own hands, and in mine, as well as in those of all practitioners who have tried it with perseverance and in accordance with the indications given by its author.

Before giving you precise rules in respect of this practice, allow me to state what I believe to be the mechanism of the production of fissure of the anus.

There are some cases in which we cannot ascertain the starting point; but we know that it may be occasioned by whatever excoriates or superficially tears the anus, such as the point of a syringe unskilfully introduced, sodomy, or other causes. We also know that hæmorrhoids and constipations are its two most common causes; and that they act with greater certainty when they find the parts in a special state, as in women recently delivered who, as said before, are the persons most liable to suffer from this affection.

The pressure which in the latter stage of pregnancy, is made upon the parts within the pelvis, by the greatly enlarged uterus—particularly upon the lower portion of the intestine, in which it embarrasses the circulation—keeps up a constant state of congestion, and when in an extreme degree resulting in hæmorrhoids. If to this it be added that constipation is also a usual accompaniment of the latter period of pregnancy you will perceive that women in that condition are peculiarly predisposed to fissure of the anus because the different causes now pointed out are liable to coexist in them.

During labour, at that stage when the fœtus has descended to the floor of the pelvis, and presents at the vulva, the perineum is

forced forwards by the expulsive efforts of the woman: the skin in the neighbouring parts is chafed, and this chafing, which extends to the anus, may be such as to amount to little tears or abrasions of the mucous membrane, which will ultimately constitute fissures.

These minute solutions of continuity will have all the more chance of being converted into ulcerations by the lochial discharge flowing along the commissure of the vagina to the anus, and by the irritation so induced preventing cicatrisation. I need scarcely add that this occurs most frequently in women who neglect scrupulous attention to personal cleanliness.

The lochial discharge itself may become a predisposing cause of fissure: the irritation which it induces and keeps up at the anus impresses on the tissues a peculiar modality, in consequence of which they tear and fret more readily when subjected to pressure by the passage of hard fæculent masses.

The essentially characteristic phenomenon of fissure of the anus is a violent pain, which the sufferer compares to the pain caused by a tear or a burn, or, to use a comparison often employed by patients, to the sensation of a flame of fire passing over the affected parts. This peculiar pain is excited by defæcation; and continues after the bowels have been evacuated for a period varying from some hours to a whole day or a whole night. So severe is the pain, that the suffering women, afraid of renewing it, dreading its return more than words can express, shrink so exceedingly from going to stool, that for eight, ten, twelve days or longer, they abstain from any attempt to evacuate the bowels. The constipation increases, the fæces become harder; and consequently the pains become more and more violent till the fæculent matter is expelled. In many cases, the pain subsides a few minutes after defæcation, to return with augmented severity, and in a few hours to assume a frightful intensity.

In some cases, the fissure is smeared with blood, which forms red streaks upon the excrementitial bolus: generally, however, there is very little oozing of blood from the ulcerated surface. It is a remarkable fact, that these pains are not only occasioned by the passage of hard masses: they are sometimes induced by soft, even by liquid motions, as has already been stated.

Upon making a digital examination of the anus, the sphincter contracts energetically; and if a forcible attempt be made to overcome the obstacle, the examination causes the patient greater suffering.

The best method of discovering the seat of the disease is to request the patient to bear down as if at stool: the anus then becomes prominent, and upon separating its folds, we are able to perceive a small ulceration at the bottom of the separating furrows: the ulcerated surface has a bright red appearance, which may be very well compared to chaps produced in the hands and lips by cold.

Many patients conceal from their medical advisers the existence of these fissures, in spite of the dreadful pain to which they give rise: you have often seen, in our wards, that after we have long remained ignorant that certain patients had fissures, the fact was at last discovered merely by chance. Some patients complain of having piles: when this complaint is made by women recently delivered, it is in itself sufficient to lead to the suspicion that there is fissure; and a more minute investigation will often show such to be the case.

When matters have advanced to a certain point, the obstinacy and intensity of the symptoms, produce a prejudicial influence on the general health. The habit acquired by patients of restraining their desire to go to stool increases constipation, and so leads to dyspepsia: digestion ceases to be performed with regularity, and dyspepsia becomes all the more urgent that patients abstain from eating that they may not require to go to the closet.

However unimportant, therefore, fissure of the anus may be in itself, it may lead to serious consequences: even when the phenomena are only local, it is necessary to use measures to save the patients from excruciating pains. To modify the ulcerated surface is the object, and to attain it, we employ a variety of topical means which I need not here enumerate. There is one among them, however, to which I must call attention: I refer to the mode of treatment recently recommended by Dr. Chapelle (of Angoulème).

Dr. Chapelle's treatment consists in the introduction into the anus of a pledget soaked in a mixture of chloroform and alcohol in the proportion of ten parts (by weight) of the former to five of the latter. Dr. Chapelle has taken care to give warning that this proceeding at first causes acute pain; but he says that after the third application, sometimes even after the second, a cure is obtained. Having been nominated by the Academy of Medicine as a member of the committee appointed to report on this treatment, I tried it in several cases in our clinical wards. No untoward results occurred. However, the small amount of success which attended

my trials caused me to resume the rhatany plan, which I find the best.

The following is my mode of using rhatany. To empty the intestine, I cause to be administered every morning a clyster, infusion of bran or marsh mallow. Half an hour after this has been returned, a quarter clyster is given of which the following is the composition :—

Water	150 grammes [5½ fluid oz.]
Extract of Rhatany . .	4 grammes [61½ grains]
Tincture of Rhatany . .	4 grammes [61½ grains].

The patients ought not to retain the lavement more than a few minutes: it should be repeated in the evening. Sometimes, when the fissure is so situated as to protrude entirely when defæcatory efforts are made, the desired object can be very well attained by using lotions of extract of rhatany.

Should the fissure be very deep seated and rebellious to treatment, the elyster must be administered with a syringe of continuous jet: the patient resists the injection, which is thrown back into the basin and taken up again by the pump, and may serve for an ablution which might be almost endless, and which ought to last for from two to four minutes or longer.

But it very often happens, that constipation which in a great measure was the cause of the malady is an invincible obstacle to its cure. Day by day, the hard and bulky excrementitial bolus tears the wound, and destroys the incipient cicatrisation obtained by the rhatany. It then becomes necessary, during the whole course of the treatment, and even after the cure, to give daily a mild laxative, so as to keep the bowels freely open, and render the fæces less hard. In relation to this point, let me beg you to bear in mind the remarks which I recently made on the treatment of constipation.

It often happens, that during the first days of the treatment, the pains are greatly aggravated, to the great discouragement both of physicians and patients. The causes of this aggravation are easily understood. Persons who from the incipient stage of the fissure, had got into the habit of going seldom to stool, to avoid the dreadful pain occasioned by defæcation, now go several times during the course of one day: the result of this change is pain lasting continuously for perhaps several days. Such cases are fortunately very rare, but they do sometimes occur, rendering it necessary to administer during the

first days of the treatment only one in place of two rhatany clysters, and to abstain from giving laxatives till the intestine has become less sensitive.

As soon as the pains are entirely subdued, one rhatany clyster a day is sufficient; and when there is reason to believe that the cure is complete, it will be necessary to continue giving, every two days for at least two or three weeks.

Persevering in the use of the remedy, even after its continuance may seem superfluous, is of great importance; for if it be abruptly discontinued, there will be a risk of a recurrence of the symptoms.

Thanks to this plan of treatment, I have been able to heal very painful fissures, and deep fissures with callous edges. The cure, it is true, proceeded slowly; and as an example of this, I may mention the case of a lady who, after refusing to submit to a surgical operation, was cured, contrary to all expectation, by pursuing the rhatany treatment for more than a year. This was certainly paying dearly for the cure; and in similar circumstances, I should certainly recommend an operation, which may either be paring the edges of the fissure—a proceeding which perhaps acts beneficially like the rhatany plan only by modifying the morbid surfaces—or forcible dilatation, to which more than once you have seen me have recourse.

It must, however, be admitted, that the rhatany treatment, particularly if prolonged, may be rather too costly. In consideration of this, I have endeavoured to substitute for rhatany, sulphate of copper, a remedy, the price of which is so small as to be within the means of even the poorest. I order a half-lavement, containing 15 centigrammes [2½ grains] of this salt to be given morning and evening. You have seen the effects of this medication. Our night-nurse, a robust young woman, recently confined, had a very painful fissure from which she had been suffering for eleven days: her condition had been much ameliorated, and the fissure nearly cured by the use of rhatany lavements for ten days, when, six days later, it was torn anew during defæcation. She lost a great deal of blood, and experienced very acute pain during the whole of the night which followed this occurrence. Next day, March 17th, she had her first lavement of sulphate of copper, which was returned, a sensation being at the same time produced as of a hot iron traversing the anus. Two days later, she no longer had pain when the clyster returned, and she did not suffer for more than half an hour in the night from having had a stool. For three days, from the 21st to

the 24th, she was absolutely free from pain on going to stool. But on the 24th, the fissure was again torn during defæcation, and in consequence the patient suffered for two hours and a half. After using the sulphate of copper for three days, the pains had again entirely ceased: the patient only suffered slightly when the motions were hard. The sulphate of copper clysters were continued till the 15th April, that is to say, for a month; and at the end of that period, the young woman passed hard stools painlessly. The cure was definitive.

You may have observed that since this case occurred, I have been using indiscriminately rhatany or sulphate of copper in the treatment of fissures of the anus; and that I substitute the one for the other when at the end of eight days, the amelioration (always obtained) remains stationary. By proceeding in this way, I always accomplish a cure. Sometimes, the cure takes place under the exclusive use either of rhatany or sulphate of copper, and in other cases, sulphate of copper completes a cure begun by rhatany, or rhatany completes the cure begun by sulphate of copper.

I now resume the subject of dilatation. I do not refer to the introduction of gradually increased pledgets of charpie, a practice which some adopt; I speak of sudden forcible dilatation performed by the introduction of the fingers. This operation would be extremely painful, were it not that we can perform it whilst the patient is in a state of anæsthesia from chloroform—a wonderful means of preventing pain.

I have still to mention some accessory means, which occasionally are in themselves sufficient to accomplish a cure. I order a sort of porridgy mixture to be prepared, consisting of one part of subnitrate of bismuth and five parts of glycerine; and with this I direct the patient to anoint the anal orifice five or six times a day, and to apply it to the ulcerated surfaces, taking care that whilst the application is being made, the folds of the anus are opened. Pommades of white precipitate and red precipitate *au trentième*, if very carefully employed will produce equally good results. I also order the parts to be bathed morning and evening with very hot water, to which is added a sixth or an eighth of *eau phagédènique*;[1] or I order five grammes [77 grains] of corrosive sublimate to be dissolved in two hundred grammes [7 fluid oz.] of water: a teaspoonful of this solution is added to a litre or half a litre of very hot water, with which the parts

[1] Vide Volume Second of this Translation, p. 629.

are to be washed for some minutes morning and evening. Cauterisations with the solid nitrate of silver and sulphate of copper, though very painful, are also sometimes very useful.

Gentlemen, I cannot conclude my remarks on this subject without telling you, that careful ablutions three times a day with simple water—that is to say, minute attention to cleanliness—will sometimes supersede the necessity of any medication.

LECTURE LXXVII.

INTESTINAL OCCLUSIONS.

Their Causes.—Their Mechanism.—Their extreme Gravity.—Treatment by medical men.—Gastrotomy may be resorted to in serious cases.

Gentlemen:—Last Tuesday you saw my honourable colleague, Prof. Jobert (of Lamballe), operate here, in accordance with my pressing solicitation, upon a man who came into our clinical wards with all the symptoms of intestinal strangulation. The patient died thirty-six hours after the operation. It is my duty to explain to you the reasons for my urgency with M. Jobert, who was opposed to the performance of gastrotomy: it is my duty to render you an account of this matter, because, notwithstanding the issue of the operation, I have still the complete conviction that it was right to have recourse to it.

The patient was a man about fifty years of age. He stated, that for many years he had had bleeding piles, that he often passed blood and pus at stool; and that he was subject to alternations of constipation and diarrhœa. With the exception of these symptoms, his health was not bad. He had had no motion for thirteen days; and for ten or eleven days, he had had vomiting. The matter vomited, which at first was food, had become bilious. We found, in fact, in the spittoon and basin left beside the patient, not only bilious matters, but matters resembling those generally found in the lower part of the small intestine, and which in such cases are improperly called stercoraceous. The abdomen was very tympanitic, but painful only in a moderate degree. The countenance, however, was expressive of very acute pain, and the most distressing anxiety. In fact, there existed all the characteristic symptoms of strangulated hernia. My inquiries were first of all directed by that view of the case; and I

searched in the groin and the fold of the thigh for a tumour. None, however, was found.

The information derived from the patient's verbal statements evidently referred to an intestinal lesion; and with the greatest care I investigated into the possible seat of the malady. The hemorrhoids of which he had spoken led me to ask myself whether there did not exist some affection of the large intestine causing an obstacle to the passage of the fæces. Both M. Jobert and I made a digital examination of the rectum, but discovered nothing as far as we could reach with the finger. Hence we concluded, that the obstruction existed higher up, as high up at least as the sigmoid flexure of the colon; that at all events it was beyond the reach of the finger. Exploration through the abdominal parietes was impossible from the enormous tympanitic distension. Whatever was the cause, whatever was the seat of the occlusion, the nature of the phenomena admitted of no doubt: the severity of the symptoms, the extreme anxiety, the smallness of the pulse indicated that danger was imminent, and that death must occur within twenty-four hours.

Too much time had already been lost to wait still longer for the doubtful results of the different measures proposed in similar cases; to count on puncturing the intestines distended with gas seemed to me equivalent to abandoning the man's life to chance; while gastrotomy, twice successful in my private practice, appeared to offer the only hope. Such were the circumstances under which I besought M. Jobert to operate. Along with me, he fully realised the gravity of the situation: he knew that though in itself gastrotomy was not more dangerous than herniotomy, it was in this particular case a much less hopeful undertaking than the operation for strangulated hernia is in ordinary circumstances.

Considering that after a too long delayed operation for strangulated hernia, it is not unusual to see the patient sink, M. Jobert was not unmindful of the serious consequences which we had to dread. Still, he yielded to my entreaties, perceiving very distinctly that it was only by his surgical intervention that a feeble and sole remaining chance of saving the patient was afforded.

Gastrotomy, therefore, was decided upon. It was proposed by this operation to form an artificial anus in the right iliac region, whereby to afford an issue to the matter impacted in the intestine; or, in other words, to afford immediate relief from the effects produced by the obstruction.

When the opening was made, a large quantity of gas and liquid escaped. The edges of the intestinal were united to the edges of the abdominal incision by some sutures, and a sound was introduced into the upper end of the intestine so as to secure a passage for the fæculent matter. Notwithstanding these measures, there was only a partial diminution in the tympanites, and to a certain extent, the other complications also continued. During the night, the patient was attacked by a sort of choleraic diarrhœa; and a large quantity of a yellowish white fluid passed through the gum tube left in the bowel. The patient had vomiting. There was an increase in the severity of the abdominal pains. The pulse became more frequent, the skin grew cold; and death occurred during the following day.

At the autopsy, we saw that the bistoury had opened one of the lower folds of the small intestine; and that that had occurred which is usual when the incision is made in the neighbourhood of the cæcum —the lower end of the ileum was the part struck by the knife. This is an exceedingly important fact; for if the opening be made higher up, there will not be so long a portion of intestine between the stomach and the artificial anus for the performance of the digestive functions, and there will be a risk of the patients dying from inanition.

The lips of the wound made in the intestine were perfectly adherent to the lips of the wound in the abdominal parietes. Notwithstanding the shortness of the time which had elapsed, the inflammation of the peritoneum, apparently dating back forty-eight or seventy-two hours, had promoted this rapid union, which had the patient lived, would in a few days have been perfect, leaving nothing to fear from the flow of matters from the digestive canal into the peritoneal cavity.

The cause of the obstruction was situated in the sigmoid flexure of the colon, which was enormously distended by gas, and seemed to be five times its usual length. It was folded upon itself in such a manner that its left curvature was pushed to the right and its right curvature to the left, while the inverted mesocolon formed a band which still more tightened the obstruction.

The small intestine was collapsed, free from fluids which had probably escaped by the artificial orifice made by the surgeon. We also perceived another lesion: the free margin of the omentum was inserted in the ileo-cæcal appendix by an elongated false membrane, which, dipping into the pelvis, tense, and fixed at both ends, formed

a sort of bridge. As we shall see, symptoms similar to those experienced by our patient, are often occasioned by bands of this description entangling and strangling the intestine. In the case now before us, however, this band had no share in producing what we observed, for on opening the abdomen with the utmost possible precaution, we were satisfied that the band did not grasp any loop of intestine.

After the death of the patient, when we had the parts before us, it was easy to perceive how, in this case, the opening made into the intestine might have proved of use. The result, for example, might have been to liberate gases enormously distending the sigmoid flexure of the colon, and to restore the contractility of its muscular tunic paralysed by the distension resulting from the gaseous accumulation. It might likewise have been the means of restoring energetic peristaltic movements, by which the intestine might be brought back to its proper situation.

The remarks which I have to make to you to-day on the subject of *intestinal occlusion* will enable you fully to understand my views. In general, Gentlemen, it is impossible to bestow too much care in ascertaining with the utmost possible precision the seat of intestinal obstructions. You will without difficulty understand—and of this the case which I have just related is a proof—that it is very important to discover whether the stoppage is in the large or small intestine. In the adult, it occurs in the great majority of cases in the small intestine, a fact which explains the success which usually attends the operation for artificial anus when the incision is made in the small intestine. The intestine quickly discharges the matters which had accumulated above the occlusion.

But in cases in which the bowel is opened far above the obstruction, the probability is that the operation will prove useless. This happened in the case which is the subject of this lecture. The obstruction was in the sigmoid flexure of the colon, and—the operation having been performed in the right iliac fossa, and the artificial anus made in the small intestine—the unfavorable state continued, and led to the death of the patient.

If Professor Jobert and I could have discovered beforehand the situation of the obstruction, we should not have hesitated to prefer Littre's method; or in other words, we should have made the artificial anus in the sigmoid flexure itself, and then probably we should have saved the patient.

Ileus, volvulus, iliac passion, and vomitus stercoris, were the names formerly given to the malady characterised by a complete cessation of alvine evacuations, accompanied by violent, incessant, and intractable vomiting, by tympanitic distension of the abdomen, acute pain—symptoms almost invariably leading to a fatal issue when the patient has been left without treatment, and often even when the most active measures have been resorted to. This disease was formerly considered as an affection essentially spasmodic. Even during last century, however, pathological anatomy had enlightened physicians as to its real nature: it had shown them the great similarity between ileus and strangulated hernia: it had shown them that the supposed spasm was something more material, and that the dreaded symptoms depended upon a structural obstacle in the passage. In our day, *internal strangulation* is the term substituted for the names I have just mentioned; and it more accurately describes the condition which generally produces the malady. Dr. Oscar Masson, a distinguished *interne* of our hospitals, has proposed to use in place of intestinal *strangulation*, the term intestinal *occlusion*, which has the advantage of being applicable to all cases in which there is accidental obliteration of the intestine, and also to all the varieties of hernia, the most common causes of occlusion;[1] but regarding which it is not incumbent on me to address you: here, we have to do only with occlusions originating within the abdominal cavity.

These occlusions, according to their causes, present numerous varieties.

The *causes* are themselves very numerous: some, independent of the intestine and developed external to it, act in such a way as to compress the bowel and diminish its calibre: others originate in the intestine itself, either in its cavity or in the substance of its tunics.

Among causes belonging to the first class, I first of all mention abdominal *tumours* when they acquire a certain bulk, and occupy a certain relative position to the intestines. The cause, for example, may be tuberculosis or cancer of the mesenteric glands, or a phlegmonous tumour in the iliac fossa; or, it may be the displacement or augmented volume of organs, as of the uterus or spleen in the cases to which Dr. Masson refers in his thesis.

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[1] Masson (Oscar):—Thèse soutenue devant la Faculté de Médecine de Paris le 2 Mars, 1857.

The most common of the first class of causes, the causes external to the intestine, are those which induce internal strangulation properly so called. Such are adhesions formed between different organs by morbid exudations; and such likewise are the *pseudo-membranous bands* formed in the abdominal cavity by inflammatory action, generally by inflammation of a latent character.

Let us suppose that, consecutive to an attack of peritonitis, the ileo-cæcal appendix had contracted adhesions with another portion of the intestine, with the ovary, Fallopian tube, or broad ligament: let us suppose that these adhesions are formed between other parts of the intestine: the result will then be the formation of sorts of bridges under which a loop of intestine might easily become entangled. The same will occur in respect of pseudo-membranous bands, of which the number, extent, seat, and disposition, admits of infinite variety. In some cases, these bridges are large enough to allow an intestinal convolution which has got under it to extricate itself. In other cases, a convolution a little too large may be seized: it will at first be only slightly constricted: and were not the tube a living organ, the contained matters would pass onwards, though not so freely, but the tube being possessed of life, vital changes take place in it which in their turn produce obstruction. The embarrassed capillary circulation leads to the engorgement of parts, and consecutively a thickening of the intestinal parietes, the calibre of which diminishes on this account, and diminishes all the more that the muscular contractility is in its turn greatly increased under the influence of irritation. The intestinal fluids and gases, interrupted in their course, accumulate in the canal which contains them; the canal then becomes partially obstructed, and at last completely shut up.

In other cases, internal strangulation arises from a very remarkable mechanism: the ileo-cæcal appendix twists round a convolution of intestine in a knot, which is sometimes double. The intestinal diverticula may also become a cause of internal strangulation; but to enable this to take place, they must be some centimeters in length, and inflammation must have produced adhesion of their free extremity: thus it is, as in the case of the ileo-cæcal appendix, that the diverticula can embrace and strangle an intestinal convolution.

Internal strangulation may also be caused by a sort of hernia in a natural opening, such as the foramen of Winslow, or in an accidental

opening, such as a chink in the diaphragm, or a tear in the mesentery or epiploon.

Occlusions originating in the intestine itself are also equally various in their nature. First in importance are organic lesions, particularly *cancerous affections,* and most frequently cancerous affections of the large intestine, which, as they advance, cause strictures and more or less complete obliteration of the canal. I may also mention syphilitic strictures, strictures resulting from thickening of the intestinal parietes succeeding chronic inflammation, strictures produced by extravasation of blood between the tunics of the intestine, such as Bretonneau speaks of having observed, and finally strictures determined by adhesions formed between the cicatrices of ulcers, by vegetations and by polypi.

Very severe symptoms of intestinal occlusion are sometimes induced by the accumulation of stercoral matter. You have certainly, more than once, in the hospitals, met with persons—generally women—having very large tumours of this description in the transverse and descending portions of the colon. These tumours, formed by masses of fæcal matter, change their position or entirely disappear under the influence of a somewhat energetic purgative; but in other cases they give rise, I repeat, to the symptoms characteristic of intestinal occlusion. That which we so frequently observe in the rectum in cases of habitual and invincible constipation may also occur in the upper portion of the large intestine. Though this kind of obstruction is generally easily got rid of, it sometimes resists all our efforts; and cases are recorded in which it has caused death.

Undigested food may give rise to similar accidents. At an early stage of my medical studies, I saw a soldier who was seized with all the symptoms of intestinal occlusion fifteen or twenty days after gluttonously swallowing some pounds of cherries with their stones. He died: and on opening his body, we found near the termination of the small intestine, at the ileo-cæcal valve, a mass of cherry-stones almost half as large as the fist, completely obstructing the intestine.

Obliterations of the intestinal canal are likewise produced by foreign bodies accidentally swallowed, such as glass and ivory balls. Cases, too, are recorded in which similar results have followed biliary calculi passing into, and being arrested in, the digestive canal.

Of all the causes of intestinal obstruction, perhaps the most

curious is the presence of lumbricoid ascarides. I saw a case of this kind in a woman, who died with all the symptoms of occlusion. At the autopsy, we found an enormous packet of these worms twisted one on the other, so as completely to obstruct the intestine.

Gentlemen, to conclude this enumeration of the mechanical causes of intestinal occlusion, I have still to speak of invagination, of volvulus, and finally of retroversion of the intestine, an example of which was presented by our patient.

You know the meaning of the term *invagination*. A portion of intestine becomes introduced within the portion below it in such a manner that the serous and mucous tunics are in apposition. The result of this intussusception or inclusion of one part of the canal within the other is necessarily a diminution of the calibre of the canal. You can understand how intestinal occlusion may be the consequence of this invagination: it is not however an inevitable consequence, for a vigorous contraction of the intestine may suffice to reestablish the normal condition. Unfortunately, however, it is not so always: by the persistence of the invagination, inflammation may arise, and glue together the two peritoneal surfaces which are in apposition. The inflammatory action being necessarily preceded and accompanied by engorgement of the tissues which it attacks, the already narrowed canal becomes still more obstructed, its calibre at last becomes entirely obliterated, and very soon the symptoms of intestinal occlusion show themselves. However, even in such cases, the issue is not so inevitably mortal as when the occlusion is dependent upon some other causes which I have mentioned. The occlusion may disappear in a way which I shall now explain. The inflammation of the invaginated portions may proceed to sloughing, and thus they may become detached from the living portions, fall into the intestinal passage, and be evacuated by stool. A reparatory process may at the same time organise a union of the two ends in mutual contact, and although the intestine remain somewhat contracted, the contraction is not sufficient to completely prevent the passage of the fæces. After a longer or shorter period, the cure is complete. Of this I have seen two examples.

Volvulus consists in the rolling or twisting of the intestines: and the case which has given rise to the present lecture may be considered as of this description. In this case, the *intestine was retroverted upon itself.* The sigmoid flexure, retained by a duplicature of peritoneum more than usually lax, and consequently more mobile

was retroverted, as you saw, in such a manner that the right curvature was placed on the left side, so as to form in the canal a fold by which the passage was obliterated.

As to the different kinds of ileus, of *miserere mei*, or *miserere* colic, they are generally attributable to the seat of the occlusion, and to the excruciating pains sometimes experienced by the patients.

Whatever may be the *causes* of intestinal occlusion, its *symptoms* are always those of strangulated hernia. For some days, the patients are without movement of the bowels, while at the same time they experience a dull pain in a limited part of the abdomen. This pain, caused by the retention of the contents of the bowel, increases in intensity and superficial extent: the intestinal convolutions become distended with gas: and then the patient has nausea, with vomiting of matters variable in their character. At this stage, the intestine has so great a tendency to peristaltic action, that the ingestion of fluids by the stomach, or pressure on the abdomen, is sufficient to cause vomiting, first of the fluid contents of the stomach, then of bilious and chylous matters pent up in the lower portion of the small intestine. *Fæcal* matter, properly so called, that is to say, matter contained in the large intestine, cannot be rejected by the mouth, even when the obstruction is seated in the cæcum, the colon, or the sigmoid flexure, because the ileo-cæcal valve, if it has retained its normal structural relations, constitutes an insurmountable barrier to the passage of matters from the large to the small intestine.

But in these cases in which the sigmoid flexure of the colon is the seat of the occlusion, there is, from the very first, a great degree of meteorismus in the iliac, epigastric, and hypogastric regions; whereas, if the occlusion be situated in the small intestine, the meteorismus, for a certain time, does not extend beyond the umbilical region.

M. Laugier has in a special manner insisted upon the importance of ascertaining the locality of the seat of the meteorismus in the diagnosis of strangulated intestinal hernia.[1]

It is difficult to determine whether the obstruction be seated in the large or small intestine; but it is more than difficult—it is nearly

[1] Laugier:—Sur un Signe Nouveau dans l'histoire des Hernies Etranglées, à l'aide du quel on peut reconnaître si l'intestin est compris dans le sac herniaire et à quelle portion du canal intestinal appartient l'anse étranglée. [*Comptes Rendus des Séances de l'Académie des Sciences;* 1840. T. X, p. 370.]

impossible to determine from the symptoms whether it be in the duodenum, jejunum, or ileum.

Whatever may be the seat of the internal strangulation, there is very soon inflammation of the intestine and peritoneum; and from the first, the symptoms sometimes derive a very marked severity of character from the peritonitis. The vomiting then becomes more frequent, the abdominal pain more general, and the meteorismus extends to the whole abdominal cavity. The pulse becomes very quick and very small: the skin becomes covered with viscid sweat: the very altered expression of the countenance is expressive of suffering: the eyes are sunken: the nose is pinched: the lips are bloodless: and the tongue is cold. The existence of peritonitis renders surgical interference useless. A state of excitement is followed by profound prostration, and death occurs without the intellectual faculties having become impaired. In some cases, so great is the prostration at the last, that the patients cease to utter any complaint.

When the physician sees the case at its commencement, or when he has had a precise account of the symptoms, there is hardly any risk of his committing a mistake: in point of fact, the total absence of stools, the pain localised in the first instance in the abdomen, then the frequency and persistent vomiting, unaccompanied by yellowness of the skin or conjunctiva, exclude the supposition that the case is either hepatic colic or simple peritonitis. But, on the other hand, if the history of the symptoms is imperfectly given, and if the physician examine the case for the first time, when the intestinal obstruction has become complicated with peritonitis, it is evident that there will be room for doubt as to the nature of the case; or a mistake in diagnosis may remain uncontradicted, till the absence of stools is a certainty. Thus, the symptoms of peritonitis from perforation have been seen to simulate the symptoms of intestinal occlusion. This occurred in a case recently treated in one of the wards of this hospital.

The *prognosis* is generally exceedingly unfavorable.

When the occlusion is produced by an accumulation of matter in the intestine, we may hope that energetic purgatives will cause the symptoms to disappear by inducing vigorous contractions of the intestine; but when it depends upon tumours situated in the walls of the intestine, we must admit our inability to cure, because these tumours, like cancerous tumours, are incurable.

In strangulation by adventitious bands as well as in cases of

invagination, of volvulus, and of inversion of the intestine, our intervention, however energetic, is generally of no avail: yet it is sometimes crowned with success.

Let us now consider the means of *treatment* which are available.

In strangulated hernia, the *treatment* which is first indicated is to employ the taxis; but, as can be readily understood, this operation is inapplicable in internal occlusion, even when we know the seat and cause of the obstruction, inasmuch as we cannot reach it by direct means. However *malaxation* may to a certain extent serve as a substitute: it will induce peristaltic movements of the intestine, the tendency of which will be to restore the parts to their normal position. In performing malaxation very great prudence is required; and the older the date of the malady, the greater must be the moderation employed.

The application of a very large cupping-glass, or of several smaller ones, to the abdomen, has also been recommended. A bellows movement ought to be made with the cupping-glasses when they have been fixed on the abdominal parietes. The traction thus exerted is said to destroy the bridles of a false membrane and rectify the invaginations, so as to relieve the intestinal obstruction.

Leroy (d'Etiolles) proposed to excite the peristaltic movements by electricity, by establishing a galvanic current between the mouth and anus. To accomplish the same object, Dr. Duchene (de Boulogne) has, in three cases, employed faradisation; and in one of them only was the result a cure. Electricity, in fact, does not seem to me to be of any real use, whatever mode of applying it may be adopted.

Causing the patients to swallow mercury and balls of lead are modes of treatment which I merely mention to remark that they were formerly lauded and are now forgotten.

The administration of purgatives constitutes the chief means of treating intestinal occlusion. They act on the same principle as malaxation, that is to say, by causing peristaltic motion; but their action is much more energetic. Senna, and the other purgatives which specially influence the muscular contractility of the intestine have the preference. For reasons which I do not require to state, these medicines ought to be administered in clysters.

In the work which I have quoted, Dr. Masson proposes to call the attention of physicians to the treatment of intra-abdominal intestinal occlusion by the external application of ice; but the

number of cases which he adduces to show the utility of this measure is too small to justify satisfactory conclusions being drawn from them.

Notwithstanding the use of the different means which I have enumerated, the symptoms generally continue, and it becomes necessary at last to resort to a surgical operation.

The simplest operation is *puncture of the abdomen*, a proceeding indicated in cases in which there exists tympanites. The great accumulation of gas in the intestine, by producing excessive distension, paralyses the contractility of the muscular tunic; for the same thing occurs in respect of the intestine, as in the bladder and all hollow organs. The paralysed state is increased by inflammation of the parts. Such of you as have been present at operations for strangulated hernia may have seen, that the portion of intestine which is strangulated does not contract when pricked by the point of the bistoury, though in a normal state, it would have contracted energetically if so treated.

The effect of puncturing the abdomen is to liberate confined gas; and to restore contractility by putting an end to the extreme distension. The punctures are made by inserting small exploratory trocars at the places where the distension seems greatest. Should the first puncture be insufficient, a second or third or even as many as eight or ten may be made. This little operation is neither painful nor dangerous. If you read the inaugural thesis of my colleague in the hospitals, Dr. A. Labric, you will be convinced that the punctures involve no danger, and that they may be productive of benefit—as they probably would have been in the case of our patient in St. Agnes's ward had they been made at an earlier period.[1]

After the distension has been got rid of, purgatives are useful to renew the contractility of the intestine.

The punctures must be performed at an early stage: the longer the delay in resorting to them, the less are the chances of success.

When all curative measures, including puncture, have failed, and the symptoms of occlusion continue—when the disease is of eight or ten days' duration, and there is either no diminution or a rapid return of the distension, with frequent profuse stercoraceous vomiting, and feeble pulse—when—to sum up in one word the state of

[1] Labric:—Thèses de Paris, 1852.

matters—when there is imminent danger to life—there is only left the grave, the extreme resource of *gastrotomy*.

It is only within the last few years, that this operation has been accepted as admissible in cases of occlusion.

As soon as it became an ascertained fact, that, in numerous cases, occlusion is occasioned by bands of false membrane, by a retroversion upon itself of a portion of the intestinal tube, by its invagination, it was thought, that by opening the abdomen, there would be a possibility of disentangling the intestines, and of so removing the obstacle to free passage through them. But the questions arose :— Upon what grounds can so perilous an operation be justified? By what indications is the surgeon to be guided in performing it?

Numerous cases of accidental extensive injuries of the abdominal parietes by cutting instruments, and bull horns, had shown that penetrating wounds of the abdomen were not so dangerous as had been believed, as there were instances of complete recovery, even when the intestines had protruded from the abdominal cavity. It was concluded, that gastrotomy, if performed according to rational surgical rules, need not be fatal, since it was not necessarily fatal in that class of accidents to which I have just referred.

Gentlemen, I admit, that when we see surgeons (to search for and detach an ovary) making large openings into the abdomen with morbidly thickened walls and the seat of great morbid changes, without taking into account the temporary contact of air with the peritoneum, and the horrible mutilations necessary for attaining the object desired, there need not be any alarm at the proposal to make a large incision in the *linea alba*, so as to enable the hand to be introduced into the abdomen, there to seek for and destroy the obstacle, or to drag forward the particular intestinal convolution in which it is advisable to form an artificial anus. It appears to me, therefore, that the undeniable success which has attended ovariotomy would justify, for the cure of internal strangulation, recourse being had to an operation which, though perhaps more calculated to excite alarm, is surer, more rational, and less dangerous than ovariotomy. For this reason, it is incumbent on me to address you on the modes of performing gastrotomy for the treatment of intestinal occlusion.

In 1676, Paul Barbette, a surgeon of Amsterdam, very distinctly suggested opening the abdomen in obstinate volvulus or intestinal intussusception. He said :—"When the ordinary means have proved unsuccessful, would it not be opportune to make an opening through

the muscles and peritoneum, to disentangle the intestine, rather than allow the patient to die without an effort being made to save him?"

Some years later, Nuck, the expert anatomist, caused gastrotomy to be performed with success in the case of a woman affected with volvulus.[1]

For a very long period nothing was said about this operation; but after the lapse of a century, in 1772, Renault, an illustrious surgeon, performed the double operation of gastrotomy and enterotomy under the following circumstances. A young man had been operated upon for strangulated hernia under hopeful conditions, when, several days after the operation, without any external appearance of the hernia, symptoms of internal strangulation presented themselves. Renault, without hesitation, cut into the abdomen: having found that the small intestine was strangulated throughout a certain part its course, he made an artificial anus. The operation was successful: on the twenty-eighth day, the fæcal matter passed by its normal outlet; and the wound was completely cicatrised.

In 1776, Pillore (of Rouen), and in 1793, Duret (of Brest), successfully practised gastrotomy both when the obstruction was in the large and when in the small intestine.

Dupuytren did not meet with similar success in 1818; but that did not prevent Mannoury, in the following year, from proposing as an extreme resource, in internal strangulation, the formation of an artificial anus, and the maintenance of the incised intestinal convolution in contact with the abdominal incision by a thread passed through the mesentery.

In 1838, Dr. Monod, in conformity with the rules of Dr. Mannoury, performed gastrotomy in a case of internal strangulation. At the autopsy, a serious lesion of the cæcum was discovered. In the same year, Professor Laugier called attention to the fact, that after the reduction of hernia, there is often a continuance of the symptoms of strangulation of the intestine: in such cases, he recommended enterotomy, and added that gastrotomy might also be appropriate in other cases than those resulting from the reduction of hernia.

All these facts were nearly forgotten, when, in 1844, M. Maisonneuve read to the Academy of Sciences, the case of a patient upon whom he had operated for strangulated hernia, by dividing the upper

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[1] Nuck:—Operationes et Experimenta Chirurgica. Leyden, 1692.

ring of the inguinal canal. Immediately after the reduction of the hernia, the patient experienced relief; but next day, he had symptoms of internal strangulation. M. Maisonneuve, without hesitation, reopened the inguinal wound, and ascertained that the intestine was perfectly reduced, but that there was an adhesion of the neck of the sac to the intestine, which he considered was probably the cause of the retention of the fæces. At this point, in fact, the intestine was gorged with fæculent matter; and the surgeon after having made himself quite certain that there was adhesion of the intestine to the neck of the sac, and of the latter to the opening of the inguinal canal, made an incision into the gorged portion of intestine, so as to form an artificial anus. There was perfect and rapid recovery. In the following year, M. Maisonneuve made this case the text of a very interesting memoir.[1]

Subsequently, MM. Denonvilliers and Nélaton declared themselves favorable to gastrotomy in intestinal strangulation.[2] According to my colleague, gastrotomy necessarily leads to enterotomy; but in my opinion, on the contrary, enterotomy ought not to be performed, except when it is absolutely necessary to make an artificial anus, that is to say, in the cases in which the intestine is gangrenous, or contracted in consequence of lesion of its tissues. When there is only volvulus, invagination of recent date, or strangulation caused by cellular bands, by adhesions of the ileo-cæcal appendix, or of an intestinal convolution, I believe that, the causes of the occlusion being known, and there being no serious lesion of the intestine, it is sufficient to destroy the different causes of the internal strangulation. A case reported by Valse shows that in cases of volvulus or invagination, sometimes all that is required to restore the intestine to its normal relations is to remove the symptoms; and so will it be in the cases of obstruction depending upon the other causes which I have enumerated. But to obtain such a result, it will be necessary to make at some part of the abdominal parietes, an incision sufficiently large to enable the operator to search for the seat and cause of the occlusion both with his hand and eye.

Further, if there is to be a probability of success, the operator must proceed slowly, following the same rules which experience has

[1] Maisonneuve:—Mémoire sur l'Entérotomie de l'intestine grêle dans les cas de l'oblitération de cet organe. [*Archives Générales de Medecine*, 1845. T. vii, p. 448.]

[2] Savopoulo:—Thèses de Paris, 1854.

sanctioned in ovariotomy. There are two questions which may present themselves to the mind of the operator when it is necessary to make an incision into the intestine in consequence of its condition from menaced perforation, or incipient gangrene. Ought he to form an artificial anus? or, would he be rash after having emptied the intestine by the incision, to unite the lips of the intestinal wound by bringing into contact the cut edges of the serous membrane, and completing the operation as in the cases in which gastrotomy is permissible for the purpose of reducing a volvulus and breaking up abnormal adhesions? It is now an established fact in surgery, that in operating for strangulated hernia, one may successfully return into the abdominal cavity the hernial portion of the bowel, after having brought together by stitches the edges of the opening into the intestine.

It is beyond my province to say more on the surgical considerations connected with this subject; and I now propose to conclude this lecture by relating two successful cases which may be cited as encouragements to perform enterotomy according to the proceeding adopted by Nélaton in cases of internal strangulation.

Sixteen years ago, I was sent for to see in consultation a young painter of Hamburg. I ascertained the existence of all the symptoms of internal strangulation—vomiting of matters seemingly stercoraceous, which had been going on for six or seven days, great tympanitic distension of the abdomen, sunken eyes, and general coldness. Death seemed imminent. I was told that the patient was the subject of hernia: I constantly made an examination with the view of discovering whether there was any inguinal tumour, and I found that there was none. I then asked myself whether the symptoms did not proceed from strangulation at the neck of the sac. I asked M. Nélaton to see the case with me. My honorable colleague, like me, perceived all the symptoms characteristic of occlusion without being able, any more than I had been, to detect the cause. The danger, however, was urgent; and in our opinion it could only be obviated by gastrotomy. The operation for artificial anus was, therefore, performed. There was an immediate cessation of the symptoms. In eight or ten days, the young man was restored: eating with appetite, and digesting well what he ate. In three months, his recovery was complete: at that date, the artificial anus was closed: and four years ago, when I last heard of our patient, he was in perfect health.

Nine years ago, one of my honorable professional brethren of Paris called me in for the third or fourth time to see his wife, who, on several occasions had presented all the symptoms of intestinal occlusion. These symptoms were coincident with ordinary constipation, over which drastic purgatives are generally triumphant. MM. Requin and Beau were consulted along with me. Upon examining the patient, we all agreed that drastic purgatives ought to be insisted on; and that along with their employment, recourse should be had to belladonna cataplasms, application of ice to the abdomen, long-continued baths, so as to overcome symptoms similar to those which had been previously experienced by the patient. Notwithstanding these different measures, the symptoms continued: there was great tympanitic distension: the matters vomited had assumed that aspect by which they are characterised in strangulated hernia, and it did not seem probable that life could continue for more than twenty-four or thirty-six hours. Under these circumstances, M. Nélaton was invited to meet us in consultation; and it was then decided to perform gastrotomy. The artificial anus afforded exit to a great quantity of gaseous and solid contents: immediate relief followed. The convalescence was rapid; and the lady is at present in perfect health.

These, Gentleman, are great facts which you ought to bear in mind; for though such cases are of rare occurrence, they are important, because the affection if left to itself is nearly always fatal.

What are the rules in accordance with which the operation of gastrotomy ought to be performed?

Perhaps I ought to leave this question to be answered by your surgical teachers; but as I am addressing medical practitioners, who, one day or another, may be called upon unaided to act by themselves in such cases, under circumstances of urgent necessity, allow me to tell you what I should advise and do if the emergency arose:—let me say also whether I should not prefer to make a large abdominal incision as is practised in ovariotomy.

I begin the operation, as M. Nélaton advises, by making, in the right side, an incision two or three centimeters in length, a little above the crest of the ilium, parallel with Poupart's ligament: the length of this incision is subsequently increased to eight or ten centimeters. In dividing, layer by layer, the skin, the cellular tissue, the muscles and aponcuroses, tying, as may be required, the large vessels involved in the incision, we at last come to the most deeply

seated aponeurosis. Proceeding always very slowly, and being very particular in sponging the wound carefully, this deep aponeurosis is cut through, when forthwith the peritoneum is reached. It is taken hold of by a small forceps and incised: afterwards, using the greatest possible precautions, a silver thread, by means of a curved needle, is carried, first through the intestine and then through the abdominal walls: four sutures are then made, two on each side of the incision: two others are made, one at the superior and the other at the inferior angle of the wound; but this time, the abdominal parietes are first perforated, then the intestine, and afterwards the abdominal parietes on the opposite side of the wound. In this way, the intestine is fixed everywhere, laterally and from above downwards, to the walls of the abdomen: by this proceeding, no exudation can take place into the peritoneum. *It is then only necessary to make an exceedingly small incision in the intestine* by means of a sharp-pointed bistoury. The opening which M. Nélaton makes in the intestine for the passage of its fluid contents is even less than a centimeter in length.

Such is the operation. It requires more prudence than skill; although of course it is always better that it should be entrusted to experienced hands.

Such is the operation which the able professor at the Clinical Hospital practised in a case which I shall now relate. Dr. Olliffe did me the honour to summon me in consultation with him in the case of a high dignitary of the Russian empire. This General suffered from great disturbance of the digestive functions. For two months his stools had been becoming fewer in number and more painful. His appetite was impaired. Gradually and slowly, the abdomen became distended: gas, at first inodorous and afterwards fœtid, was discharged by the mouth. When I saw the patient he had become much reduced in flesh and strength. His face was typical of abdominal disease. There was nothing discoverable, however, indicative of very decided cachexia, nor did the cutaneous tint characteristic of cancer present itself. Through the thin abdominal walls were distinguishable the lumpy masses formed by the distended abdominal convolutions. There was a great degree of tympanites. No pain existed anywhere. For eight days, the patient had had vomiting: at first, the matters vomited consisted of alimentary ingesta: they were afterwards of a yellowish colour, horribly fœtid, and very obviously stercoraceous. There was an exceedingly distressing hiccup. The patient was entirely without spontaneous

stools. At rare intervals, and as the result of great efforts, he expelled some gas by the anus. In the first instance, I prescribed the ascending douche. There was administered in that form, twice a day, from four to six litres of liquid. The fluid passed in, and was returned; but it only brought back with it an exceedingly small quantity of fæcal matter—small in calibre, and somewhat ribbon-shaped. The existence of an intestinal occlusion was certain; and most probably it was seated in the large intestine, judging from the peculiar form of the matters which were passed. The stricture could not be reached either by the finger or a very long sound introduced into the rectum. There was reason to hope that the stricture was fibrous and not cancerous, as that marked cahexia indicating hereditary taint was absent. Drastic purgatives, the ascending douche, and other means having all failed, enterotomy was resolved upon, and was admirably performed by M. Nélaton, in the manner in which I have just described. There gushed from the incision in the intestine three large basinfuls of a yellowish, very fœtid liquid.

The patient immediately experienced very great relief. The operation was performed on the 22nd June, 1863: for the seven following days, gas and matters tinged with bile passed by the artificial anus: the patient was able to eat, and regained his usual strength and spirits. On the evening of June 29th, he had very severe colic; and then, soon after passing gas twice by the anus, he had a formed motion. During the night, he had another stool. On the following day, unfortunately, he had a violent paroxysm of fever, which continued nearly an hour. On the day after the next, he had another attack of fever. The wound, however, was not very painful; and there were no symptoms of peritonitis. Nevertheless, on the 1st July, nine days after the operation, the General died, after having given for seven days the best hopes of recovery.

Let me now endeavour to explain the mechanism of the cure of occlusion: I only refer to the cases in which the cure is definite, and not to those in which it is accomplished at the cost of an incurable artificial anus.

In cases of the latter class, the cure obtained is only very partial: it is the snatching of a patient from immediately threatening death, and that certainly is no small matter; but then, on the other hand, it is condemning him to live with a disgusting infirmity.

That is, however, the only solution of the case for which there is

any ground of hope, when the occlusion depends upon compression by a tumour situated external to the intestine or on stricture resulting from organic disease of the intestine itself.

It is otherwise when there exists intestinal invagination, intestinal strangulation by a band, or retroversion of the intestine: under these conditions, there is a chance, though slight, of enterotomy leading to a complete and radical cure.

How then does this cure take place? It may be brought about in invagination in two ways which I have already explained to you. The state of invagination may spontaneously cease from the peristaltic movements of the intestine restoring the parts to their normal position: or, the invaginated portion of intestine may become detached by sphacelas, and fall into the intestinal canal, passing forth by the natural passage, leaving the two surfaces of divided intestine intimately soldered together by a reparative process originating in the parts themselves.

Gastrotomy then, on the one hand, causes a cessation of the symptoms which threaten to put a sudden termination to life, is the means of prolonging existence, and of contributing to recovery in cases in which the unaided efforts of nature might in time accomplish a cure; and, on the other hand, it promotes that cure in the manner which I have just explained.

If the occlusion continue, gas and solid matters go on accumulating in the intestines; and the inordinate distension so induced more and more confirms the occlusion. Should the cure proceed by elimination of the invaginated portion of intestine, it may happen that at the time of the elimination taking place, the distension of the bowel, and the stretched condition of its walls may be so great as to hinder the soldering together of the divided intestinal surfaces: this by allowing the contents of the bowel to pass into the peritoneal cavity, may occasion speedily fatal peritonitis. But, on the contrary, should gastrotomy afford an external exit to the contents of the intestine, the intestine collapsing to a certain extent, will allow the reparative process to proceed, and the two ends of the divided canal will become soldered together.

I shall now state what occurs in cases in which the strangulation is caused by bands, or by retroversion of the intestine on itself. When, in the dead body, we cautiously distend with air a portion of intestine thus coiled up, the air is perceived to pass onwards, and, as it advances, to gradually uncoil the involution. If, on the other

hand, there exist a certain amount of resistance, and the insufflation be performed in a forcible manner, the air will accumulate above the obstacle, distending without unrolling the intestine, and thus augmenting the occlusion.

In the living subject, similar phenomena present themselves. A band exerts slight pressure on the intestine, or, in consequence of some mechanical cause which escapes our observation, a part of the intestine becomes temporarily put out of its normal position: the result is a certain amount of impediment to the onward passage of the contents of the bowels: then follow a slightly increased secretion of gas, which goes on augmenting so as to distend the intestine, thereby destroying its contractile power, till, from a disengagement of its gaseous contents, the intestine returns to its normal volume.

In these cases, the same thing may occur which sometimes takes place in hernia. A hernia may with facility pass out and in through an opening which is quite adequate, till, at some particular time, the hernia becomes engorged, and so cannot traverse the formerly sufficient passage.

In internal strangulation of the intestine, puncture, by affording exit to the gas, is sometimes sufficient to cause the symptoms to cease; but in the vast majority of cases, this measure is inadequate, and the resource which we must then look to is enterotomy. It is explicitly indicated when the symptoms of occlusion have existed for six or eight days—when there is great tympanites—when the matters vomited present that peculiar character of which I have spoken to you—and finally, when the persistence and severity of the symptoms presage imminent death.

Though the establishing of an artificial anus is unquestionably a serious operation, it is by no means so dangerous a proceeding as might be supposed. Certainly, the risks which attend it bear no comparison with those to avert which gastrotomy is resorted to. When all other means have failed, therefore, gastrotomy ought to be practised. It was by this means that my able colleague, M. Velpeau, under desperate circumstances, saved the life of a patient, to whom he was called in by M. Briquet. During my medical career, I have five times recommended its adoption; and I have had the satisfaction to see two patients recover in consequence of the operation, who without it would have been hopelessly lost. I have related to you the history of both their cases.

LECTURE LXXVIII.

HEPATIC COLIC: BILIARY CALCULUS.

More common in Women than in Men.—Rarely occurs in Children.—Composition, Form, and Volume of the Calculi.—Biliary Gravel.—Cause of the disease is not known.—Sometimes hereditary.—May be coincident with Urinary Gravel, and be a manifestation of the Gouty Diathesis.—Hepatic Colic.—Diagnosis often very difficult.—May be mistaken for Gastralgia, Colalgia, and Heptalgia.—Pain and Jaundice are not essentially pathognomonic signs; and may be absent.—They may be the symptoms of other affections, as of hepatitis, heptalgia, or of the hepatic colic caused by ascarides or hydatids.—Presence of calculi in the stools is the only positive diagnostic sign.—Symptomatic affections caused by the calculi: Acute Hepatitis: Retention of bile in the liver, in the gall-bladder: Dropsy of the Gall-Bladder: Rupture of Gall-Bladder and its excretory ducts.—Biliary Fistulæ.—Paraplegia, reflex and consecutive.—Treatment of Calculous Disease of the Liver.

Gentlemen:—Listen to the language used by Morgagni in relation to biliary calculi:—"I greatly fear," he says, "that what was true in the times of Fernel is true in our day, and will remain the same in the future, that is to say that we shall continue to be without characteristic signs by which they can be easily and certainly recognised, and shall, as hitherto, have only conjectures to guide us in forming a diagnosis."[1] The progress of modern science has not in any way altered the accuracy of Morgagni's proposition: for us, as for our predecessors, the diagnosis of hepatic colic remains imperfect up to the time when the patient passes a calculus or a

[1] Morgagni:—His 37th Letter on the Seat and Causes of Diseases.

fragment of one. Till then, there are no data except probabilities—probabilities in some cases, it is true, exceedingly strong.

It is evident, for example, that when persons complain of having experienced on different occasions, and at intervals of longer or shorter duration, violent pains in the right hypochondrium, pit of the stomach, and round the navel—when these pains shoot through the whole abdomen, and up the chest to the right shoulder—when they are so excruciating as not only to cause the patients to cry out and to throw themselves into an almost convulsive state of agitation, but sometimes even to produce syncope—when they are accompanied by nausea and vomiting, and after continuing five hours are followed next day by jaundice—it is evident, I say, that when these conditions exist, we may almost unhesitatingly pronounce that the malady is hepatic colic, a diagnosis which sooner or later will be entirely confirmed.

Hepatic colic, however, is very far from being always characterised by so well marked a group of symptoms. Generally, patients only complain of being subject at intervals—twice or thrice a year, perhaps—to what they call *cramps in the stomach*. They give no explanation of the cause of the recurrence of these attacks. The fact which they realise is that the attacks of colic are accompanied by a feeling of anxiety, discomfort, and sometimes a tendency to vomit—that after a crisis of from four to six hours, the symptoms wholly disappear till a new attack sets in. If you ask the patients whether they have remarked that the attacks were followed by jaundice, the majority are unable to reply: but if you are called in soon after an attack, you discover that their skin and mucous membranes have a yellowish colour, which is particularly marked in the oculo-palpebral furrow.

The icteric tint is absent in some cases: in others, it is very general, and very decided: I should wish to give you the reasons for the differences which this phenomenon presents itself. It seldom appears till the day after the attack: then also, the stools, which have been few and more or less hard, become of a greyish hue or of an ash colour, while the urine assumes the mahogany colour peculiar to jaundice. Even during the attack, the urine, which is very copious, is limpid like water from the rock, being in fact what is called *nervous* urine.

Attacks of hepatic colic, though generally transient, are sometimes considerably protracted, there being during their continuance alterna-

tions of exacerbation and calm, the latter condition, however, being only partial. I saw with my colleague Dr. Bergeron of the Hôpital Sainte-Eugénie, a woman who had an attack of six months' duration: and, with my friend Dr. A. Joux of La Ferté-Gaucher, I saw another patient who had hepatic colics accompanied by green jaundice, which lasted almost uninterruptedly for three months. The duration of the colics was still longer in the case of a well-to-do Parisian merchant, whom I attended for more than a year without being able to recognise anything more than the symptoms of hepatitis characterised by turgidity of the liver (which was very painful on pressure), jaundice, an almost ever-recurring fever, loss of appetite, and general debility.

Gentlemen, I stated to you that the diagnosis of hepatic colic was of necessity incomplete, so long as the patient had passed neither a calculus nor a fragment of one. Consequently, it is indispensable, when the symptoms lead us to suspect the presence of biliary calculi, to examine each stool attentively, to cause them to be received upon a fine sieve, and to be dissolved and washed by a stream of water in such a way as to cause all except solid matter to pass through: the stools ought to be treated in this way for four or five days after the cessation of the colics, though the proceeding is very disgusting. You saw a woman at the Hôtel Dieu, who has been many times under treatment in the wards, but who never passed calculi by stool till the third, fourth, or fifth day after the termination of the attack of colic.

Biliary calculi are observed much more frequently in women than in men; and, as you know, it is much more common to find them at autopsies of the old women of the Salpêtrière than at autopsies of the old men of the Bicêtre. The disease is much more common in old age, and in mature age between thirty and fifty, than during adolescence. Youth, however, does not confer an absolute immunity. Two young women between sixteen and seventeen years of age whom we had at the same time in St. Agnes's ward (beds 1 and 34), were remarkable proofs of this. Two years ago, I observed biliary calculi in a girl of nine years of age, whom I saw in consultation at Saint Germain-en-Laye. Lieutaud and Portal have mentioned facts that would show that they may be met with even in newly born children. These exceptional cases do not, however, at all weaken the general rule.

It is a mistake to suppose that biliary calculi vary in colour with

the age of the subject in whom they occur: their colour is solely dependent upon the nature of their constituents. They are generally of a brownish green colour: sometimes, they are of a blackish brown or are even quite black; in the fresh state, some have been seen to present a bluish and others a reddish tint: it is not unusual to meet with them of an ash grey colour: some have been pointed out as white, transparent like crystals, or, to use the better comparison of Heister, like gum-Arabic. These whitish calculi are spotted with black and red points, or they may present a yellow golden aspect, or points shining like talc. The different colours are due to the proportions more or less considerable which they contain of cholesterine and the colouring matter of the bile: the colours change as the calculi become dry, from the matters, which in the fresh state produced the coloured coating, losing their properties with desiccation, they also lose the lustrous varnished appearance which they sometimes present, and assume that dull hue which some have from the first.

They frequently attain the size of a hazel-nut, and may become as large, or even larger, than a hen's egg: their size is in an inverse ratio to their number. When they are less in volume than a very small lentil, they are no longer considered calculi but "biliary gravel." The quantity of this gravel may be enormous; for, without speaking of the extraordinary cases related by Morgagni, in which the individual grains in the gall-bladder were from seven hundred up to one and two thousand, and even to upwards of three thousand, you will meet with patients who pass by stool spoonfuls of these small yellowish green bodies. Dr. P. E. Chauffard lately described to me a case bearing on this subject: the patient was a magistrate, who had passed a quantity of small uneven gravel, the size of some of which was that of coarse river sand; their passage by the anus occasioned acute pain and a sort of laceration: the patient stated that the quantity he had passed was sufficient to fill both hands.

Biliary is perhaps more common than urinary gravel; but it is easy to understand why it should more frequently escape observation.

I shall not enter upon a long description of the physical characters of biliary concretions, for were I to do so, I should only be repeating what you have learned elsewhere. I shall merely recall one or two facts to your recollection. Their consistence is very variable:

when recent, mere pressure is sometimes sufficient to crush them, and usually their resisting power is about equivalent to that of the stearine used in making candles: when placed in the flame of a candle, they melt, and burn like fatty substances. Their specific gravity is very little greater than that of bile; when dry, they float on water. Their form and size have relation to their number. When there is only one, it is pretty nearly round or oval; at some points, its surface may bear the mark of the parts within which it was formed, and which exerted pressure on it. When the calculi are numerous, they affect the most diversified forms, and are usually many-sided, presenting facettes which correspond with other facettes on other calculi; or they may become embedded in one another, as if articulated like the heads of bones in their sockets.

Their structure nearly always consists of cortical layers of colouring matter: there is the middle portion consisting of thin triangular layers converging from the periphery towards the centre or nucleus. This central nucleus is generally composed of the colouring matter of the bile and mucus; but sometimes it is a foreign body: in a case mentioned by M. Nauche, it was a pin; in a case of which Lobstein gives a drawing, it was a lumbricus teres which had penetrated the biliary passages.[1]

It is all the more easy to give an account of the formation of biliary calculi that the colouring matter of the bile not entirely dissolved in the liquid bile, that the cholesterine, which is present only in a state of suspension, constitute, so to speak, microscopic nuclei: when, under these circumstances, there takes place a modification of the biliary secretion causing an abnormal increase in the suspended materials, a speck of colouring matter a little bigger, and a spangle of cholesterine a little larger than the rest, will become the centre of a calculus, particularly if at the same time the flow of bile is abnormally sluggish.

That everything which tends to disturb the secretions of the liver, to alter the composition of the bile, and to prolong its progress through the biliary passages, and the duration of its stay in the bladder may be regarded as a proximate cause of biliary calculi is, it must be admitted, a very vague proposition; and again, we have not advanced one step towards the solution of the etiological question when we have spoken of the influence of the depressing passions,

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[1] Lobstein:—Atlas d'Anatomie Pathologique. Paris, 1829.

a sedentary life, office-work, and all the trivial causes which so often come to the help of our ignorance.

It is extremely probable that diet has an intimate relation to this affection; but there is diversity of opinion as to the nature of that relation. According to observations made by Glisson and by Peyrilhe, biliary concretions are found more frequently in the gall-bladder of sheep and oxen slaughtered in March, April, and May, after having been kept on dry forage during the winter, than in those killed during summer and autumn, after pasturing in the meadows; and from these statements it has been concluded that the first-mentioned kind of feeding causes the formation of these calculi. This explanation is open to dispute: for it may be asked, whether in the former case, want of exercise and air have not quite as great a disturbing influence, as nature of aliment on the functions of the liver, and consequently upon the formation of calculi.

Finally, Gentlemen, we are baffled in our attempts to discover the real cause of this as of many other diseases. But, be the causes what they may, it is certain that they are dominated by a special predisposition existing in the individual. It is, therefore, the same in this respect with biliary calculi as with renal gravel. Some individuals, who though they lead an active life, and follow a temperate regimen in which vegetables predominate, nevertheless pass gravel almost daily with the urine. It is with difficulty that such persons get rid of the gravelly affection for even a few weeks by taking the iodide of potassium (that specially efficacious lithontriptic), or by drinking the waters of Pougues, Contrexéville, or Vichy. As soon as the treatment is discontinued, and often, even, during it, the malady returns with discouraging obstinacy. A similar statement is applicable to biliary calculi in some women. In virtue of an incomprehensible predisposition, there is a ceaseless formation of new calculi; and the malady is neither cured nor checked notwithstanding the best hygienical and medical treatment.

It would appear from observations made by several physicians that this predisposition is hereditary.

It has also been observed—and Morgagni has quoted numerous cases in point—that biliary and renal calculi often co-exist. So great is the importance which Morgagni attaches to this fact, that he admits, that when symptoms of hepatic colic show themselves in a person subject to urinary calculi, there is strong reason to suspect

the existence of biliary calculi, particularly if the subject have passed the age of adolescence.

When we recollect that urinary gravel is very often the sign of the gouty diathesis, we see why the coincidence which I have just pointed out is to a certain extent the reason of another coincidence referred to by physicians as existing between biliary gravel or calculi and gout, especially when the latter, after having been frankly articular, localises itself in the abdominal viscera.

Gout is an unusual disease in women; and yet it is in women that we most frequently meet with biliary calculi.

In nine out of ten cases of this affection, the gall-bladder is the seat of the gravel. This arises, as is obvious, from the gall-bladder being a reservoir in which the bile naturally accumulates, and in which the conditions of repose and concentration of the liquid are most favourable to that aggregation of molecules by which the calculi are formed. It is in the gall-bladder that they are occasionally met with in large quantity, and in which, when there is only one calculus, it attains an enormous size.

Sometimes, also, biliary concretions may form in the liver itself, that is to say, in the roots, or in the very radicles, of the excretory ducts of that gland. Generally, however, it is biliary gravel and not calculi which we find in that situation: but it occasionally happens that large calculi form and are moulded within the dilated ducts. When the concretions are situated near the periphery of the liver, they constitute tumours projecting from the surface of the organ. In such cases, after perforating the walls of the canals within which they have been developed, they become lodged in the parenchyma itself.

Save the exceptional cases, to which I shall have immediately to recall your attention, in which the calculi open for themselves an outlet from the place wherein they were formed, they find their exit by the intestine. To reach it, those formed in the branches of the hepatic duct must traverse the trunk of that canal, the gall-bladder, the cystic duct, and at last the choledoch duct. It is when the biliary concretions are passing through the excretory passages of the liver that they give rise to the symptoms which constitute hepatic colic.

The pain and the jaundice are symptoms which explain themselves: the first, by the irritation and spasm produced by the foreign bodies traversing the passages which are narrow and provided

with valves: the second, by the obstacle which these same foreign bodies present, from their volume or bulk, to the passage of the bile, when once they become impacted in the choledoch duct. The jaundice is also, and perhaps better, accounted for by the sympathetic irritation of the liver modifying the secretory functions of that organ.

The proximate cause of hepatic colic is not always appreciable when the affection shows itself after some effort, pressure on the hypochondriac region, rather violent exercise, or a powerful mental impression. There is one cause, however, and that, too, the commonest of all causes, which has been distinctly indicated by authors, particularly by Pujol: I refer to the influence of digestion. It is indeed after the principal meal that the hepatic colic usually supervenes, a fact which may be explained in the following manner. The gall-bladder, the cystic and choledoch ducts are muscular and contractile organs, intended to act during duodenal digestion, whilst the liver is going to secrete bile in large quantity to be poured into the intestine. In virtue of a stimulus produced upon the extremity of the choledoch duct, and which is transmitted by reflex action, the secretion of the hepatic gland takes place with a rapidity which is also observed in the secretion of other glands, as, for example in the secretion of the salivary glands, when the appetite is excited by the sight of nice dishes, or in the secretion of milk, when the nipple is sucked. During duodenal digestion, the biliary secretion is similarly excited; and the bladder moreover contracts so as to pour its reserve of bile into the intestine. This ejaculation of bile, if I may use such an expression, will cause the expulsion with it of the concretions whether formed in the ramifications of the hepatic duct or, as is more usual, in the gall-bladder.

The pains are first felt at the pit of the stomach, and around the umbilicus; and when they are localised in the right hypochondrium, this is a consecutive occurrence.

Patients employ all sorts of comparisons to give an idea of the sufferings which they endure: they speak of pinching, tearing, and burning: but that of which they generally complain is an acute, agonising feeling of constriction, which sometimes extends to the back, epigastrium, and opposite hypochondrium, where it is increased by pressure even by simple palpation. The pain goes down into the abdomen, in some cases simulating nephritic colic: more generally it ascends into the chest and even to the neck, and it

is a remarkable fact that many persons experience it in the right shoulder.

The patients are sometimes exceedingly excited, utter piercing cries, roll on the bed or the floor, endeavouring by ceaseless change of position to moderate their sufferings. In some, the disturbance amounts to more than mere agitation, and consists in convulsive attacks; and in others, there are fainting fits which occasionally though very seldom lead to death.

This kind of colic is frequently accompanied by nausea and vomiting. When it sets in soon after a meal, the food is forthwith rejected, after which a glairy substance is ejected: sometimes, at the end of the attack, there is vomiting of yellow bile. As I remarked at the beginning of the lecture, the urine is at the same time clear as water from the rock. It is not till twelve, eighteen, or twenty-four hours later that it assumes the reddish-brown mahogany colour characteristic of jaundice; and if jaundice is to show itself it is not till then that it will appear.

In hepatic colic, the pain probably depends on the same mechanical cause as in nephritic colic. In the latter, once the renal calculus becomes engaged in the urethra, it is constantly propelled onwards by the urine accumulating in the calices and pelvis of the kidney, and with every onward move which it makes in its passage through the narrow canal, it causes excruciating suffering. We may explain in a similar manner the pains produced by biliary calculi impacted in the choledoch duct. But how are we to explain the pains produced by calculi engaged in the cystic duct? I confess, Gentlemen, that I have many times fruitlessly asked myself this question; but, nevertheless, calculi of the gall-bladder, and consequently of the cystic duct, are by far the most common, and also the most frequently productive of hepatic colic. I can quite understand that, in some particular movement of the body, a calculus contained in the gall-bladder may present itself at the cystic opening, and become engaged in the duct; but when it has got there, how will it make way? It certainly does make way; and in its progress causes agonizing paroxysms of pain which patients describe with extraordinary exuberance of language. You then require to bear in mind that the gall-bladder, like the urinary-bladder, is provided with a muscle; and that this muscle must contract with increased energy when a calculus is painfully impacted in the neck of the cystic duct just as the urinary bladder contracts with indo-

mitable vigour when gravel or a fragment of stone is arrested in the prostate, or even in the canal of the urethra. It is for a similar reason that the uterine muscle contracts energetically at the term of gestation, when we tickle the neck of the uterus, or when the product of conception becomes more completely engaged in that passage. It is very obvious, that the gall-bladder is full of bile in the intervals between the times during which digestion goes on, and that it empties itself by a somewhat powerful contraction whilst the food is being elaborated in the stomach and duodenum, but particularly during elaboration in the latter. We can understand that in a gall-bladder full of calculi, the muscular tunic will become hypertrophied, just as happens in the case of the urinary-bladder when it contains a stone; and this is not a mere rational hypothesis, for the hypertrophied muscular tunic can be demonstrated at the autopsy. The conclusion, therefore, is quite natural, that contractions of the bladder, in the first instance, propel the liquid against the calculus engaged in the canal so as to accelerate its progress, and that then contractions, irrespective of the bile, push it onwards. We can also see how it is that the paroxysms of pain may depend, to a certain extent, on these contractions which, like the contractions of all hollow muscles, will be intermittent. I do not require to tell you, that when the cystic canal is free, and the calculus is engaged in the choledoch duct, the action of the vesicular muscle may contribute to produce the paroxysms of pain, and aid in propelling the liquid accumulated behind the obstacle, so as to communicate an onward impulse to the calculus.

This rapid sketch which I have now traced embraces the most violent and most characteristic crises of the disease. But, as I was careful to tell you, there are many cases in which the symptoms now described are not so well marked. Generally, your patients will complain of cramps in the stomach; and you may be led to mistake hepatic colic for heptalgia, gastralgia, or coxalgia. It must be admitted that in such cases it is not very easy to form a diagnosis merely from the nature of the pain. There are, however, certain considerations which will assist us in doing so.

If a patient, subject to attacks of neuralgia in other parts of the body, the face for example, complains of cramps in the stomach recurring periodically—if he localise with precision the seat of the pain in the epigastric region, and tell you that it comes on at long

intervals after eating, sufficient grounds will exist to justify your entertaining the idea that there may be *gastralgia*.

Finally, if the pains appear to be more localised in the left hypochondrium, while there exist at the same time constipation and the other symptoms which characterise *colalgia* (a disease to which I directed your attention in my lectures on dyspepsia), there will be reason to suspect neuralgia of the large intestine.

Should the right hypochondrium be more particularly the seat of pain, if it has been positively ascertained that no biliary calculi were ever passed, if the pains recur with tolerably precise periodicity, as in other forms of neuralgia, I conclude that the case must be one of *heptalgia*, although that be very uncommon as an idiopathic affection.

But when the pains, whatever may have been their seat, are followed by jaundice, the diagnosis will be much less doubtful; and examination of the stools will show, sooner or later, that the case is one of hepatic colic.

The simultaneous manifestation of these two symptoms generally implies the existence of hepatic calculi, but it is necessary to recollect that one or other symptom, or even both, may be wanting, and also, that they may both be present, and yet there be no biliary concretion.

It is not unusual, perhaps, after an attack of colic induced by the passage of a calculus, for other smaller concretions, or still more probably for biliary gravel, to pass through the prepared passages without occasioning a renewal of the pains. Under other conditions, it is much more unusual for small calculi, or even for gravel, to pass through the excretory passages of the liver without leading to severe and characteristic suffering. The pains, it is true, may become more or less dull, and may only amount to a sensation of discomfort, as I have often observed.

In these very cases, the jaundice supervenes, though not simultaneously, at least within twenty-four hours. This symptom may, however, be absent. The most trustworthy authors have given examples of individuals who passed biliary calculi without ever having had jaundice. In these cases, the concretions were either very small, or if not very small had been too quickly expelled to obstruct the flow of bile, or excite that sympathetic influence on the liver which has so great a share in the production of jaundice. Again, colic has been occasioned by calculi contained in the gall-bladder, which, after

being accidentally put in motion, have regained the place they originally occupied without remaining in the canals wherein they were temporarily engaged. I knew a patient who for more than four years had had attacks of hepatic colic, and yet in whom they had never been followed by jaundice. In the fifth year, the attacks became more severe, jaundice appeared, and the disease ceased upon the expulsion of a single calculus, shaped like an olive, the greatest diameter of which was two centimeters.

Absence of pain and of jaundice do not then necessarily imply the non-existence of calculi: more than that, I have said that these symptoms may, in some cases, supervene as manifestations of affections quite different from calculous hepatic colic.

True paroxysms of hepatic colic have been caused by *hydatids of the liver* becoming engaged in the biliary passages. For example, there died not long ago in the wards of Dr. Lasègue at the Hôpital Saint-Antoine, an individual affected with jaundice of a very deep shade of colour, in whose body there was found, at the autopsy, hydatids obstructing the excretory biliary conduits. A similar case presented itself in a young woman, who, as you remember, died in our wards on the 20th September, 1863. When I come to speak of hydatid cysts of the liver, I shall have to recur to this case. I would for the present, only remind you, that the hydatic cyst of the liver with which this patient was affected, opened first into the biliary passages, then through the diaphragm into the pleural cavity, and that the first symptoms which showed themselves were violent hepatic colics, which recurred at remote intervals, and were accompanied by very deep jaundice. These cases, I would remark to you in passing, completely negative an assertion of some physicians to the effect that hydatids in the liver are never accompanied by jaundice.

Dr. Bonfils has collected a very considerable number of facts relating to the symptoms which may be produced by the presence of lumbricoid worms in the biliary passages. These symptoms, which show themselves suddenly, are characterised by violent pains, accompanied by vomiting and jaundice, so similar to, as to be mistaken for, those which characterise hepatic colic depending on biliary calculi.[1]

Professor Andral has reported cases which appear to prove that

[1] Bonfils:—*Archives Générales de Médecine*, for June, 1858.

heptalgia, itself very rare as an idiopathic affection, likewise, in some cases, when complicated with jaundice, simulates hepatic colic.[1]

If I add, in conclusion, that *acute hepatitis*, which occasions sharp pain, recurring in paroxysms, and gives rise to jaundice, may also lead to an erroneous diagnosis, you will see how great are the chances of error, and why the only really sure element of diagnosis which we possess is the presence of biliary concretions in the stools. Up to that point, however well-founded our presumptions may be, they still are nothing more than presumptions.

You will not be surprised, then, Gentlemen, that I do not attempt to give you any more precise information in regard to diagnosis, a subject upon which some light is pretended to have been shed by certain authors who describe signs by the aid of which they say, we can recognise the situation of the calculi in the different parts of the biliary apparatus.

It may happen, however, that the gall-bladder, from containing an accumulation of small calculi projects from under the margin of the false ribs, so as to be recognised through the abdominal walls, in thin subjects. This was the case, as I showed you, in one of our young female patients in Saint Bernard's ward. In exploring the abdominal region in women in whom the parts are very flaccid from repeated pregnancies, we can, by making firm pressure with the fingers whilst the patient takes a deep inspiration, reach a hard pouch within which a well-marked crepitation is perceived. But cases of this description are quite exceptional: the case now before us is only the second of the kind which I have met with.

The frequent recurrence of the symptoms, their persistence, their intensity, and the presence or absence of vomiting during the crisis, have by no means the diagnostic significance attributed to them.

When the calculi are engaged in the choledoch duct, there is no bilious vomiting, a fact which is explained by the position of the calculus preventing the passage of bile. Bilious vomiting indicates that that duct is free, and that the foreign bodies are impacted either at the neck of the gall-bladder or in the cystic duct. It is conceivable, however, that small concretions may traverse the choledoch duct and produce colic, without preventing the bile from reaching the duodenum and stomach. We can likewise understand that bilious vomiting is not a necessary phenomenon of hepatic colic,

[1] Andral:—Clinique Médicale.

even when the colic is occasioned by calculi which have not proceeded beyond the cystic duct.

The duration of the symptoms, their intensity, and more or less frequent recurrence, are exceedingly variable phenomena; and depend upon a great many circumstances, of which the most influential is assuredly the volume of the concretions by which they are caused.

The larger the concretions, the more slowly will they effect their transit: moreover, at any stage of their passage, they may be stopped, and pushed backwards into the gall-bladder, whence, under the influence of new proximate causes, they may again become engaged in the biliary passages, and again excite paroxysms of colic. Or, on the other hand, they may remain impacted, so to speak, in the cystic or choledoch duct; and if they do not produce colic, they will give rise to symptoms resulting from the distension of the gall-bladder or the accumulation of bile in the hepatic ducts.

You, no doubt, recollect an autopsy which we made in 1861. There was no symptom during life which had led us to suspect the existence of hepatic calculi; but on examining the liver, we found two engaged in the cystic duct, one being as large as an olive, and the other a little smaller. The larger was closely adherent to the walls of the duct: prolongations of mucous membrane extending into the interior of the biliary concretion had to be broken before the calculus could be detached. I do not suppose that these prolongations were formed when the calculus had attained its full size: it is more probable that at a somewhat early stage, the presence of the calculus had set up acute irritation of the mucous membrane producing fibrinous exudations which became partially organised: afterwards, new layers of cholesterine and colouring matter augmented the central nucleus, enveloping the bands of accidental cellular tissue. I can scarcely explain in any other way the encasement which I have described.

When hepatic colic has been of long duration, or has recurred at very short intervals, two symptoms, which I have already pointed out to you, are added to the feverish condition of the patient arising from inflammation of the liver. This inflammation (which has arisen under the influence of irritation extending to the gland itself, and under the influence, also, of a greater or less obstruction of the excretory ducts, by the bile temporarily impeded in its circulation retained in the passages which it traverses), shows itself by the

organ becoming increased in size, and the seat of pain being rendered more severe by pressure. The increase in the volume of the liver is sometimes so great that it extends more than a hand-breadth beyond the false ribs, and descends into the right iliac fossa. This kind of hepatitis, which is that most commonly observed in temperate climates, often continues after recovery from the colic in which it originated, and when there are no remaining biliary concretions. It becomes chronic: the enlarged state of the liver continues: it is the seat of dull pains, of which, at longer or shorter intervals, there are exacerbations; the biliary secretion is disturbed; and this functional disturbance causes dyspepsia, and sometimes extreme anæmia. This chronic inflammation, frequently, also, becomes the cause of cirrhosis and other organic changes, which sooner or later terminate in death.

The retention of bile in the liver, caused by the obstruction of one of its excretory ducts also induces enlargement of the organ, dilatation of the larger and smaller ramifications of the hepatic duct, the calibre of some of which may become equal to that of the quill of a goose. These dilatations, sometimes partial, like aneurisms, form small fluctuating tumours resembling abscesses in appearance; but it is only on opening the dead body that we can recognise the nature of the lesions, for the retention of bile in the liver does not declare itself by any symptoms different from those of the hepatitis which accompanies it, and was likewise its cause. Distension of the gall-bladder does not lead to these consequences.

Distension sometimes proceeds so far, that the augmented volume of the gall-bladder causes it to project into the hypochondriac region. By palpation, we can detect the tumour by which it is constituted —a fluctuating tumour, which, according to its size, occupies different situations. We may detect it under the margin of the false ribs; or, when the distension is greater, we may find that it extends into the epigastric region, and across the median line into the left side: or that it descends to the umbilicus, or sometimes even to the iliac crests. Cases are recorded in which it occupied the entire abdomen.

Distension of the gall-bladder is generally accompanied by more or less inflammation; and this inflammation leads to thickening of the different tunics; and particularly to thickening of the muscular tunic, a circumstance which explains the relative variety of rupture.

On opening the dead body, no bile is found in the gall-bladder; but, generally, it contains thin mucus resembling white of egg, and

at other times a fluid resembling urine, or, it may be, a fluid which is limpid and colourless. There then exists that condition which has been called *dropsy of the bladder*.

This cystitis which may terminate in suppuration, and which also produces more or less deep ulcerations of the walls of the gall-bladder, may supervene independently of any obstacle to the passage of the bile through the cystic and choledoch ducts, arising from the mere presence of the calculi causing permanent irritation. This which is, perhaps, the most common cause of the cystitis explains the persistence of pains during many consecutive years in persons subject to recurrent hepatic colic.

The cystic and choledoch ducts are sometimes the seat of a considerable accumulation of bile, producing dilatation of their calibre. The choledoch duct has been found so distended from this cause as to equal the small intestine in volume; and Morgagni (quoting Schenck) mentions a case of Traffelmann "in which the choledoch duct was as large as a stomach, and completely filled with calculi of different sizes."[1]

Though much rarer than distension, *atrophy of the gall-bladder*, is a structural change which has been mentioned as one of the consequences of the presence of biliary calculi. The pouch contracts upon the concretions which it contains: its walls become thickened, and adhere so firmly to the foreign body that they can hardly be separated at the autopsy. At other times, the calculus is imbedded in a part of the gall-bladder in such a way as to cause it to form two pouches, one of which contains the foreign body, and the other is filled with bile and mucus.

Inflammation of the gall-bladder is not unfrequently propagated by contiguity of tissue to the peritoneum. In this manner is produced more or less extensive peritonitis.

These peritonitic attacks, generally partial, give rise to adhesions between the gall-bladder and neighbouring parts—the omentum, right kidney, stomach, duodenum, colon, and abdominal parietes. The false membranes constituting the adhesions are so thick in certain cases, that when they become lost in the middle of the mass which they form, it is difficult to dissect out separately the gall-bladder. These limited peritonitic attacks sometimes become general in a very sudden manner, assuming a subacute form which soon proves fatal.

[1] Morgagni: Letter 37th.

However, a rapidly fatal attack of peritonitis does not generally supervene in that fashion. It is usually the consequence of rupture or perforation of the gall-bladder or biliary ducts.

I have observed, that, when from obstruction of the excretory passages, the retained bile had accumulated in the choledoch duct, cystic duct, or gall-bladder, the walls of the latter were hypertrophied, and consequently more resistant, which explains why rupture of it is so rare an occurrence in such cases. If, however, acute cystitis supervene, the walls of the gall-bladder undergo softening, and then ulcerate. Thus we have a perforation which causes rapidly fatal peritonitis.

Eight years ago, I attended a retired notary who had been long subject to attacks of hepatic colic. Upon one occasion, I was sent for to see him on account of the paroxysms having assumed an unusual degree of severity. On my arrival I found that the patient had constant vomiting and a tympanitic state of the abdomen; there was total suppression of urine, an excessively feeble, almost imperceptible pulse, and a greatly reduced temperature of the body. To be brief, all the symptoms of subacute peritonitis were present. I pronounced the case to be hopeless, and the next day the patient died.

Although unable to obtain an autopsy, I am justified in saying that the case was one of peritonitis caused by effusion into the peritoneum consequent upon rupture of the gall-bladder or one of the biliary ducts; and that what took place was similar to what had occurred in another patient who died in nearly similar circumstances under my observation.

The case occurred at Tours. A rich inhabitant of that town, a patient of Bretonneau, was suddenly seized during an attack of hepatic colic (which had continued for five or six days) with intractable vomiting and all the signs of severe peritonitis, under which he succumbed in twenty-four hours. On opening the dead body, we found in the peritoneal cavity, a calculus the size of a hazel-nut; and we discovered in the choledoch duct a perforation, through which had passed a considerable quantity of bile along with the calculus.

I am indebted to an excellent pupil, Dr. Werner of Dornach, for the history of a similar case, which is particularly interesting from the difficulty experienced in the diagnosis of hepatic colic.

"Very soon after my arrival in this place," writes Dr. Werner, "I was called to a patient who had what he called very violent

cramps of the stomach, following great mental emotion. I diagnosed the presence of biliary calculi; and instituted my treatment in accordance with that view of the case. On the following day, the pains having increased, and peritonitis having declared itself, I suspected that rupture of the gall-bladder had taken place; and requested that one of the principal physicians of Mulhouse should be asked to meet me in consultation. *Hepatitis* was the diagnosis of that gentleman, who sneered at my supposing that there were calculi. Dissatisfied with this opinion, I requested that a second physician should be asked to see the patient. He concurred with the former physician's diagnosis. Going home a little shaken in my opinion, I attentively reperused my notes taken at your clinical lectures; and the result was, that I became more than ever convinced of the soundness of my original view of the case. Your lectures on hepatic colic, it seemed, had not yet reached Mulhouse. In two days, the patient died. With permission of the family, I made an autopsy in presence of one of the colleagues whom I had met in consultation. I found twenty-five calculi, as large as hazel-nuts, in the gall-bladder, which had burst and allowed the bile to pour into the peritoneum: a calculus larger than any of the others was impacted in the choledoch duct."

Cases of this kind are not uncommon: and a considerable number have been reported by authors. In some cases it was pure bile, serosity, or mucus which escaped; in other cases it was pus, the inflamed gall-bladder being transformed into a sort of abscess: while in other cases, again, biliary concretions of greater or less magnitude were found in the cavity of the peritoneum.

These perforations and ruptures do not always lead to the formidable consequences of which I have been speaking. When the gall-bladder or its ducts have contracted adhesions with the neighbouring parts, perforation may take place, without allowing anything to pass into the peritoneum, because the pouch has opened either externally or into the intestinal canal, urinary passages, or liver itself. It is in this way that external and internal *biliary fistulæ* are produced.

External biliary fistulæ may originate spontaneously: or be formed artificially by the surgeon in opening the tumour which is sometimes of very considerable size, projecting beyond the abdominal parietes in such a way as to be mistaken for an abscess. Cases of this description are reported by authors, particularly by Jean-Louis Petit.

The following case was communicated to me by Dr. Léon Blondeau who obtained the particulars from a patient whom he saw at Vichy in 1850.

A gentleman, aged 68, of vigorous constitution, who had had rather frequent attacks of urinary gravel was seized with hepatic colic in 1843, and soon afterwards perceived a pretty large tumour in the right hypochondrium. It was painful on pressure; and was evidently fluctuating. The patient consulted Professors Rostan and Cruveilhier, and insisted that he should be operated on, as he believed that by an operation he could be cured. He was advised to wait; but during the following year, his malady continuing, a surgeon of Versailles consented to apply three cauteries to the tumour. After separation of the eschars, one of the cauterisations closed up, and two others, after giving exit to mucosity tinged with bile, became the orifice of fistulæ, whence issued about a dozen calculi, several of which were as large as the extremity of the little finger. From that time, the patient, without being aware of it, occasionally passed concretions: he found them amid the dressings of the wound in the morning. Sometimes, however, the expulsion of calculi a little larger than usual occasioned pain. He mentioned that on one occasion a considerable quantity of bile passed through one of the fistulæ, and that coincident with this flow of bile, which continued for about a fortnight, there was a certain degree of loss of flesh; the plumpness lost during the flow of bile was soon regained when the flow ceased. In addition to the wounds affording exit to calculi and harder concretions, they sometimes discharged blood and serosity. In other respects, the health of the patient was good.

I attended a similar case along with my honourable friend Dr. Laguerre. Our patient was a gentleman sixty years of age who had been often tormented with hepatic colic. Consequent upon an unusually severe and persistent attack of colic, there supervened acute pain in the right side, in the situation of the gall-bladder. There was soon felt a puffy state of the parts, the skin became red, and a real abscess formed, by opening which an exit was given to a muco-purulent fluid and calculi.

Dr. Guyon communicated to the Academy of Sciences a case in which recovery followed the passage of a biliary calculus through the abdominal parietes. The patient was a lady who after presenting for some time a not very painful tumour in the region of the liver which only occasionally produced slight febrile action, passed by the

tumour which had been opened by caustic potash, a triangular calculus of about six centimeters in its greatest and of about four and a half in its smallest circumference. Consequent upon the expulsion of the foreign body, the local discomfort diminished day by day, the fever ceased, and the cure was complete.

Gentlemen, you are aware that M. Petit held that it ought to be regarded as a rule in surgery, to anticipate by operation the opening of the gall-bladder, with a view to prevent fatal peritonitis from its contents passing by a spontaneous rupture into the peritoneal cavity. Establishing a similarity between retention of bile caused by calculi in the gall-bladder and retention of urine caused by stone in the urinary bladder, he came to the conclusion that lithotomy was applicable in both cases. After quoting Petit's opinion, Van Swieten adds :—*Forte prima fronte audax apparebit facinus talia moliri ; sed certe audacior ille fuit, qui primus ex vesica urinaria sectione calculum educere tentavit.* Petit, however, held, that it was only when the gall-bladder had contracted adhesions with the abdominal parietes that the operation ought to be performed; he pointed out that if it was resorted to under other conditions, the very accidents we desire to prevent would be caused, by establishing a communication between the gall-bladder and the abdominal cavity. He indicates the signs by which the existence of adhesions can be recognised : but as Boyer justly remarks, these signs, which in reality are only two in number—immobility of the tumour, and puffiness of the integuments, have no certainty of character. According to Boyer, it would, therefore, be better to wait for clearer evidence of the existence of the affection, and till the tumour has shown a decided tendency to open externally.

Nevertheless, Gentlemen, there are cases in which the imminence of the patient's danger obliges the physician to interfere as promptly as possible. That we may proceed with perfect safety in these cases, we must, following the practice of Bégin, endeavour to produce adhesions, by cutting through the abdominal parietes, layer by layer, till the peritoneum is reached. When this has been done, we wait twenty-four hours before completing the operation by cutting into the tumour itself. Proceeding in that way, the same results are attained as by Récamier's method of opening the tumour by the application of potassa fusa. That was the plan pursued in the case I have just related to you.

These proceedings are not free from danger. I have often men-

tioned another plan, which I have devised for accomplishing the same object. I use a multiplicity of acupunctures in the following manner. I insert thirty or forty steel needles having large heads: I cause them to penetrate to the gall-bladder. In treating ovarian cysts, I proceed on a similar plan; and indeed it is principally for such cases that I have employed it. The needles are allowed to remain undisturbed for three or four days: they are then removed, when another set are introduced in the spaces between the punctures made by the first set: this system is renewed a third time. It is essential that the needles have heads of sealing-wax: it is likewise essential that a shield of glove-leather be applied over the part, and traversed by the needles at the time they are pushed into the skin: unless this double precaution be taken, the needles will very quickly penetrate into the tissues, there becoming lost, not without risk of dangerous consequences.

The practice which I have just described is certainly simpler, and freer from danger than any other as yet proposed for obtaining adhesions between a cyst and the abdominal serous membrane. I need not say that the small inflammatory areola developed around each puncture causes, from the proximity of the punctures, inflammation of the peritoneum sufficient to comprise all the surfaces which we wish to adhere.

You understand, Gentlemen, that *internal biliary fistulæ* are quite beyond our means of treatment. As I have just been telling you, communications may be formed between the gall-bladder and the duodenum or colon.

An old lady, who lived in the Place Royale, was seized after an attack of hepatic colic, with violent pains which were limited to the left side: along with these pains, she had obstinate constipation. These symptoms had led me to think that there might be pelvic abscess, when, in one day, the patient passed forty calculi by stool.

Expulsion of biliary concretions with the urine proves that a fistulous passage may form between the gall-bladder and the pelvis of the kidney. Cases reported by reliable authors, such as Frank, show that similar communications may become established between the gall-bladder and the liver itself.

"A woman," says Frank, "who had suffered severely from hepatic colic, before her death, presented signs of gangrenous inflammation of the liver. At the autopsy, the concavity of that organ was found to be occupied by a large abscess containing fœtid pus. Through

one of the sides of this gangrenous pouch, there projected the point of a triangular calculus. The walls of the gall-bladder cartilaginous, a finger-breadth in thickness, adherent to the colon and duodenum, only communicated with the liver by several sinuses, whence flowed similar fœtid purulent matter. It also contained two calculi as large as chesnuts, and many others of smaller size."

When biliary calculi once get into the digestive canal, whether they enter by the natural route, the choledoch duct, or by a fistulous passage, the peristaltic movements generally carry them on to the anus, whence they are expelled with the stools. There are cases, however, very unusual cases, it is true, in which calculi have ascended into the stomach, and been vomited.

You, no doubt, remember the history of a young woman who was admitted to Saint-Bernard's ward with symptoms of formidable peritonitis. At the autopsy, we found a biliary calculus impacted in the appendix vermiformis, in which it had caused a perforation. Similar cases are mentioned by authors.

You had an opportunity of observing one of the most curious examples of these internal fistulæ in a woman who lay in bed 28 of Saint-Bernard's ward. The following is a succinct account of the case:—A woman fifty-three years of age became a patient in Saint-Bernard's ward, in 1863. She stated, that some years previously she had been under treatment by Dr. Béhier at the Hôpital Beaujon for paraplegia, with lesion of the vertebræ. The paraplegia was fortunately cured.

I was first of all struck with the deeply jaundiced tint of the skin, which at once fixed my attention upon the liver. The patient stated that some weeks previously she had experienced violent cramps in the stomach, which were accompanied by nausea, and sometimes by vomiting: on the following day, the skin became yellow, and the urine assumed a very dark colour. On each recurrence of these symptoms, she had an attack of fever characterised by shivering, followed by a severe and protracted hot fit but which was not succeeded by sweating. Some weeks after she came into the hospital, she had a much more violent attack of colic. The pain in the hepatic region assumed an exceedingly intense form; and for at least a week I thought there was severe hepatitis with inflammation of the gall-bladder. Then she had, at nearly the same hour, daily, for almost a month shivering followed by heat and sweating: at the beginning of the paroxysm, there was no diminution in the jaundice,

and always an exacerbation of the pain. I remained in the belief that the fever was caused by the hepatitis, and by the inflammation of the gall-bladder induced daily by the presentation of a calculus at the entrance of the neck of the cystic duct.

Examining the liver by palpation, I found that throughout its whole extent, it was hard and very sensitive. On the right side, the great lobe extended six or eight centimeters beyond the margin of the ribs; and as the abdominal walls were thin and flaccid, it was easy to follow the sharp edge of the liver to the point where it became lost under the left hypochondrium.

After following the cutting edge of the liver for nearly ten centimeters from right to left, I all at once found an interval occupied by a globular body having the liver for its base and projecting downwards: it was about the size of an orange, hard, without inequalities of surface, and very painful: then came another division, limiting on the left the projection of which I have just spoken: and after this, I could again feel the margin of the liver, and continue easily to follow it.

Every one frequenting the wards was able to repeat this exploration: and, like me, all thought that the tumour they felt on the margin of the liver was the distended gall-bladder. I was more than ever persuaded that it contained calculi, that a calculus obstructed the cystic duct, that there existed inflammation and extreme distension of the gall-bladder, and that there was also subacute hepatitis.

However after residence in hospital for two months our patient went out in a good condition. The jaundice had slowly disappeared: the paroxysms of pain had recurred at greatly prolonged intervals, and then wholly ceased. The fever subsided, the appetite and plumpness returned; and when the patient left the hospital, she only complained of a constant acute pain in the hepatic region, while in size the tumour had diminished nearly one half. It was quite evident to me that the calculi remained in the gall-bladder, and that it had become tolerant of their presence.

But at the end of December, 1863, this woman, who had enjoyed good health for six months, returned to our wards with symptoms in all respects identical with those for which she had been previously treated: the same hepatic pains, always coming on towards evening in an irregularly intermittent manner, and always accompanied by a true paroxysm of fever, with shivering, generally slight, and in-

variably accompanied by jaundice; the intensity of the febrile paroxysm and jaundice was always proportionate to that of the pains. During the intervals between the attacks, the woman's health was pretty good: her appetite returned: she left her bed, went down into the garden, engaged in the usual occupations of her sex, and gradually lost the icteric tint. The periods of remission were even sometimes so prolonged as to cause her to speak of leaving the hospital. She, however, always retained a bulky tumour in the right hypochondrium, presenting the same form which I described: it was painful during the paroxysm, and very slightly sensitive during the periods of remission.

Consequent upon straining in vomiting caused by the attacks of hepatic colic, an inguinal hernia on the right side was produced; and from time to time, this hernia was the cause of suffering. On the 20th May, 1864, the attacks of vomiting suddenly became exceedingly frequent, while at the same time, the hernia was the seat of acute pain; and on the following day, it was evidently strangulated. The operation of colotomy was performed; but two days afterwards the woman died.

Here is an account of the unexpected lesions of the liver which were found at autopsy:—

There was no very remarkable increase in the volume of the organ: it extended about five centimeters beyond the margin of the false ribs, and presented a singular condition on its sharp edge. A deep hollow marked the separation between its right and left portions: a little beyond this, on the anterior margin, there was another hollow: situated between these two clefts, there was a large rounded lobule which looked like the gall-bladder distended with calculi. The general aspect of the liver was very much that presented by cirrhosis. Its external surface was studded with a multitude of yellowish white granulations, among which was perceived the deep brown colour of the organ: the yellow tinge was, however, much less decided than in cirrhosis, and the tissue, when torn, did not present the granular aspect characteristic of that lesion.

On its inferior surface, the liver presented the appearance of a double gall-bladder: there were seen, in fact, in the situation of the fundus two pyriform tumours, both of which were evidently distended with calculi. The largest of the two pouches—that is to say, the gall-bladder—was situated internally, immediately below the isolated lobule which I have described. Its globular form, and the resistance

which it presented, were sufficient to indicate that it contained solid bodies. From the neck of this *tumour* proceeded a number of very dilated canals, which were rounded off within the lobules. Conspicuous among these canals were two describing two concentric curves, the concavity of which was to the front: the one led to the upper and posterior part of the left lobe: the second sent a branch to the quadrilateral lobe, and became lost on the anterior part of the internal extremity of the liver.

There existed no trace, therefore, of the usual distribution of the biliary ducts. A fibrous cord, comprised within a peritoneal fold, passed downwards from the middle part of the curved canal I have described; but from its having been cut near its origin, I could not ascertain where it terminated.

The accessory pouch situated external to the gall-bladder, to which it was adherent at its summit, was of an oval form, and immoveably fixed to the inferior surface of the liver by close adhesions.

After ascertaining the nature of the external appearances, the biliary reservoir and its afferent ducts were opened. From each incision made in the course of the dilated ducts, there came a gush of yellow bile, containing a great deal of minute gravel. The gall-bladder in its inferior part contained a round calculus the size of a large hazel-nut, yellow externally and internally. Above the place occupied by the calculus, was a large cylindrical pouch constituting a common reservoir, in which all the biliary ducts terminated. There was decided thickening of the walls of the gall-bladder.

At the base of this dilatation of small tubes, immediately above and external to the calculus, there was a series of lines indicating very well the spiral form of the cystic duct. Above this point was seen a rounded cicatrix, the centre of which was perforated by an opening leading to the accessory pouch. Another fistulous passage led to the duodenum.

The accessory pouch, filled by three large and three small calculi, pale externally and yellow internally, communicated with the gall-bladder by a small cavity leading into a rounded pouch which exactly resembled a canal contracted at both ends. The bottom of this pouch was large, and was filled by the three calculi of which I have spoken. The walls, which were very thick, presented internally a membrane marbled by vascular arborizations filled by a whitish fluid, in which were seen, by the aid of the microscope, numerous pus-corpuscles, mingled with small globules of fat. Even the walls of

this pouch, when microscopically examined, presented only the elements of adventitious tissue: the internal surface of the cavity was lined by pavement-epithelium.

The duodenum, otherwise in a healthy condition, had contracted intimate adhesions with the gall-bladder: by means of an oblique passage through these adhesions, a fistulous communication was established between the gall-bladder and the digestive canal. The intestinal orifice of this passage was quite smooth and rounded; it opened at the beginning of the second portion of the duodenum and easily allowed to pass the canula of a capillary trocar. The opposite opening was smaller, and seemed as if cut by a punch.

It was, therefore, by this indirect channel that the bile filtered into the intestine from time to time, in compensation for its inability to pass through the obstructed choledoch duct. We still had to make out the vestiges of that canal. The spiral lines situated near the orifice communicating between the gall-bladder and the neighbouring pouch, seemed to indicate the position of the commencement of the cystic duct: and the enormous sac which surmounted it, and received all the biliary ducts was in reality the enormously dilated hepatic duct.

The choledoch duct was no doubt represented by the fibrous cord already mentioned. This cord occupied the anatomical situation of the excretory biliary duct; it presented a distinct cavity, two or three millimeters in length, and had become impermeable. Unfortunately, it was impossible to decide the question by following the course of this cord into Vater's ampulla. However, it seems pretty certain that the pouch glued on to the gall-bladder was an accidental cyst formed around calculi which had fallen into the peritoneal cavity.

This case, besides other remarkable peculiarities, was characterised by a series of attacks of hepatic colic in each of which there was a real paroxysm of intermittent fever, which always began in the afternoon. How are we to explain this intermittence in the phenomena, seeing that the lesions of the biliary passages were so deep-seated, so invetcrate, and so permanent?

Let me add, that it was impossible not to mistake for the gall-bladder distended with calculi, an irregular lobe which was felt extending across the abdominal walls. Here we see what would have been the embarrassment of a surgeon, upon rashly opening this supposed gall-bladder to evacuate its supposed calculi. I only allude to this point because some of you who attend the daily visit

discussed the propriety of operating, a proposition which I emphatically rejected.

The woman of whose case I have been speaking was paraplegic; and her paraplegia seemed to have resulted from an affection of the vertebræ. I regret that this question was not elucidated at the autopsy; and I regret it all the more that I wish now to speak to you regarding a very unusual symptom, a symptom, moreover, which is perhaps even more remarkable for being misunderstood than for being uncommon:—I mean *reflex paraplegia*. You are aware that much has lately been written upon paraplegia consecutive upon affections of the genito-urinary passages, and in particular on that which follows uterine diseases;[1] but so far as I know there has not yet been published any description of the paraplegia which is a sequel of hepatic diseases. In his excellent work on diseases of the liver, Frerichs has mentioned this subject.[2] Here, however, are the details of a very remarkable case of this kind.

In November 1863, I attended along with my friend and pupil Dr. Peter, a lady (Madame d'O.) who was sent to us from the country by an excellent physician, Dr. Levavasseur of Blanc. She was some years beyond thirty, and had married at the age of sixteen: she had had seven children and a miscarriage without suffering from any consecutive ailments. She was remarkably fat in early youth. She had several times been attacked with an eczematous eruption on the ears, neck, and cheeks.

"Till 1862," said Dr. Levavasseur, in a letter which he sent to us, "she never had any serious illness. For some years, however, she had suffered occasionally from epigastric pains which seized her suddenly, lasted some hours, and ceased under the influence of calmatives. There seemed a coincidence between the first manifestation of these pains and the cessation of the herpetic affection. About four years previously Madame d'O. had lost a sister, who was the subject of Addison's disease. Some members of her mother's family had had gout.

"A year ago, about the middle of November, Madame d'O., being then between the fourth and fifth month of pregnancy, after two

[1] See R. Leroy (d'etiolles):—Des Paralysies des Membres Inférieurs: Paris, 1857.—Also, Brown-Sequard:—Paralysis of the Lower Extremities: London, 1861.—Also, Jaccoud:—Les Paraplégies et l'Ataxie: Paris, 1864.

[2] Frerichs:—Traité Pratique des Maladies du Foie. French translation; Paris, 1866.

days of fatigue from long walks, was suddenly seized with violent epigastric pain, apparently of the same nature as that which she had before experienced from time to time, and which had generally been of short duration. On this occasion, however, it was otherwise: the pain continued, took possession of the entire hepatic region, and irradiated backwards to the dorsal vertebræ: it was sensibly increased by the slightest pressure. There was intense fever, and the pulse was 120. Universal jaundice showed itself; and the general volume of the liver became notably augmented. There was pain in the right shoulder, and slight epistaxis. After eight days of active antiphlogistic treatment, there was a diminution in the intensity of all the symptoms, which in the opinion of the physicians who had seen the patient—Dr. Mascarel of Chatellerault, Dr. Arnould of Blois, and others—were the characteristic symptoms of acute *hepatitis*. The fever subsided; the pulse fell to 100, and then to 90; the yellow colour of the skin began to fade; and all seemed to be going on towards speedy and complete recovery. But such really was not the case: from the time that there was an abatement in the original acute symptoms, at first quite localised in the hepatic region, that is to say for a period of eleven months, there occurred a series of symptoms, various in character, and unusual in respect of the original nature of the disease.

"For several months, there was complete loss of appetite, disgust at every kind of aliment, frequent vomiting of undigested food, great thirst, the tongue denuded of its epithelium, and obstinate constipation. During this period, the pulse ranged between 90 and 100.

"Subsequently, there supervened a general condition of pain—*hyperæsthesia of the skin of the whole body*—when the slightest pressure was made, and this was most manifest all round the chest and in the superior extremities. After a time, the patient had attacks of acute pain *coming on spontaneously*: they extorted cries from her, and gave her no respite: their violence, however, varied irregularly in paroxysms: their seat was principally in the extremities and specially in the fingers and toes: by slow degrees, this state—always coincident with the disorders of digestion already mentioned—became modified: the paroxysms of pain became less violent, occurred at longer intervals, and then entirely ceased. They left behind them, however, a peculiar state of *muscular impotence*, which still exists from the waist to the toes.

"I ought here to mention that, in respect of this want of

muscular power, there has been an amelioration in the state of the patient. Her ability to move the superior extremities was not always as great as it now is: for a long time, she had great difficulty in using her hands: for a long time, also, she was unable to change her position in bed, to move herself from one part of it to the other, to turn from one side of the body to the other, or to bend and extend the lower extremities without assistance. Now, however, she can perform all these movements.

"For some months, the great disgust at food has gradually disappeared; and at present, the patient eats with an appetite which it is often necessary to restrain. She has long since ceased to vomit her food; and the constipation has become less obstinate.

"Madame d'O. went to Vichy: on her return home, the pulse had entirely lost its frequency, and before her departure for Paris, it was between 60 and 65.

"Amid all this succession of symptoms, there was great variation in the state of the liver: after the disappearance of the original acute symptoms, it returned to its normal condition; but on several occasions, it again became enlarged, though the increase in size was not great. Likewise also there were several returns of the jaundice with a temporary icteric character of the urine. These returns of jaundice were consequent upon paroxysms of pain experienced at the epigastrium and in the region of the liver, which recurred about two months prior to her leaving Vichy, *for the first time since the beginning of the malady*. The pain had the same character as at the beginning: that is to say, it was epigastric and hepatic, characterised by acceleration of pulse and by jaundice, and excepting a short continuance of the jaundiced appearance of the skin it was completely at end in fifteen or twenty hours.

"During her sojourn of two months at Vichy, there was a more or less frequent recurrence of the paroxysms of pain: since her return home, they have been more frequent, happening several times a week. They have acquired a character different from that which they originally possessed. At first, they were characterised by pain in the epigastric and hepatic regions, which soon invaded the trunk, loins, shoulders, and spine. Any attempt to speak occasioned struggling and difficulty from constriction of the jaws. There supervened, after a longer or shorter period, natural or provoked vomiting of a thick, stringy, glairy fluid; but there never was any food thrown up, even when the vomiting occurred imme-

diately after a meal. The pain then suddenly ceased: a general relaxation succeeded: and the patient experienced no subsequent effects of these violent paroxysms, except a feverish state for twelve or fifteen hours, and a sensation of general bruising.

"About a month or three weeks ago, after the patient had not had an attack for more than the usual interval of six or seven days, she was seized, for the first time, with embarrassed movements of the tongue and an extreme difficulty in pronouncing words, a state which continued till next day, and then disappeared, an access of pain occurring at the same time.

"Embarrassment in moving the tongue has returned since then on different occasions, but to a less decided degree.

"The lady's accouchement took place in January, without leading to any notable change in her state of health. The infant lived eight days. Before delivery, she had albumen in the urine, and puffiness of the extremities.

"Biliary calculi were never discovered in the stools."

To sum up this case:—Violent attacks of hepatic colic occurred in a lady descended from a gouty father, and who herself had had eczema which according to Dr. Bazin's doctrine must have been arthritic. During the course of these hepatic attacks—and this is the point which I wish to set forth in relief—many nervous symptoms in succession showed themselves, involving both motion and sensation, consisting first in general hyperæsthesia, and terminating in paraplegia.

Here is the lady's state when I saw her for the first time with Dr. Peter:—There was an intensely jaundiced appearance with bronzing: the liver, which extended four finger-breadths beyond the false ribs, was hard, slightly painful on pressure, and free from nodulation: the hypochondrium was covered with the cicatrices of wounds produced by cauteries applied on account of supposed chronic hepatitis which some physicians had diagnosed. There existed emaciation in a marked degree, anorexia, difficult digestion, great general debility, but no fever. Along with these symptoms, the lady had great difficulty in moving the inferior extremities, which were not only weakened, but somewhat contracted. I tried to make the patient walk. I observed that walking had not merely become very difficult in consequence of the feebleness of her limbs, but was impossible from the vicious position which the feet had taken. They were in a state of forced extension; and as they had been for a long time

in an anomalous situation, they had become stiff, and in a condition approaching pseudo-anchylosis. As this vicious position of the feet involved an incapacity to place them at right angles with the legs, standing was impossible.

My diagnosis was hypertrophy with chronic hyperæmia of the liver, and without any alteration in the hepatic tissue. I looked upon the hypertrophy as the consequence of the hyperæmia which was a consequence of a series of violent attacks of hepatic colic. Bear in mind that I attributed the attacks of hepatic colic to the presence of biliary calculi. The formation of these calculi, I was inclined to attribute to the gouty diathesis, (the first manifestations of which were eczematous eruptions), and which was hereditary in Madame d'O. As for the paraplegia, it was in my opinion dependent upon the hepatic affection, the case being analogous to those cases of paralysis which are called *reflex*, and which supervene in certain persons after affections of the bladder or uterus—the only difference being, that paraplegia consequent upon disease of the liver is a much more uncommon occurrence, and one which has not hitherto been described. Finally, Madame d'O. was, from time to time, affected with a sort of paralysis of the tongue which either prevented her from uttering a single word, or caused her to stammer. These symptoms, which were transient, supervened under the influence of even slight mental emotion.

We proceeded energetically with the treatment. Madame d'O. came to us as an infirm person, who was looked upon by her family as an incurable paralytic. For the paralysis of the motor powers of the inferior extremities, I daily employed electricity: for the vicious position of the feet, I ordered, at Matthieu's, steel-jointed boots, so constructed that one could daily, by means of a trigger-spring, gradually bring the feet nearer and nearer to a right angle. Electrisation showed that there was diminution of the electrical sensibility of the muscles of the lower extremities, and almost complete abolition of the electrical contractility of the same muscles: there was, however, a partial return of the voluntary contractility. After fifteen times employing electrisation and shampooing (which occasioned great pain), there was a partial return of sensation and electrical contractility: and the voluntary movements became a little more extended.

The patient leaves Paris, to place herself again under Dr. Levavasseur, whose treatment I recommended in all its details; and

which was intended to bear simultaneously on the articular rigidity, the paraplegia, and the calculous affection of the liver. Here is an extract from a letter written by Dr. Levavasseur to Dr. Peter some time after her return to Dr. Levavasseur's care.

"Since the return of Madame d'O. from Paris, her state has been always improving, particularly in respect of the paraplegia. Under the use of electrisation and shampooing, there was a speedy return of sensation and electrical contractility in the muscles of the lower extremities. For the last two months, the electrisation has been discontinued on account of its having become insupportable by Madame d'O. Since that time, she has, without any other assistance than a short stick, walked distances of some hundred meters, and moved about her house, going from one storey to another without any other aid. Her steel-jointed boots have been long discontinued.

"The large muscles of the thighs and calves of the legs have not yet regained their natural size; but, nevertheless, they feel, when handled, as if they had a much better development: the adipose tissue constitutes a layer very thin compared with the obesity which existed prior to the malady.

"There was very little change in the special symptoms of the hepatic affection. The paroxysms, which were perhaps rather less frequent, occurred about once every fifteen days: they were as protracted and as violent as before: no calculi were passed.

"The speech, also, was frequently embarrassed: not a day passed during which this symptom was not produced several times by the most trifling emotion.

"There was no fever: sleep was excellent, and the appetite was good. For about a month, however, digestion has been somewhat difficult: after meals, there was distension of the abdomen, an uneasy feeling at the epigastrium, with flushing of the face and head. I had for some time discontinued the use of ether and turpentine capsules. The catamenia had not reappeared."

In June 1864, I saw this lady: she was then walking very much as she did before her illness. To confirm her restored health, Madame d'O. went to Néris, where she remained in a most satisfactory state till August. At the end of that month, Dr. Levavasseur wrote to me to say that there was "a continuance of her state of general amelioration, a gradual restoration of plumpness and strength, a return of the menstrual function for about three months, with a more and more complete disappearance of the different paralytic

symptoms, except, perhaps, that from time to time there was some embarrassment of the tongue in speaking. There was, however, a recurrence, pretty much as before, of the hepatic attacks. In conclusion, let me add, that for a long time past the cessation of the paralytic symptoms has been complete, and that the attacks of hepatic colic have been less frequent.

This case, Gentlemen, if I be not mistaken, is a very remarkable example of "reflex" paralysis occurring as the sequel of a calculous affection of the liver. The unusual nature of the case has induced me to enter fully into the details: and I feel assured that once attention has been directed to the possibility of paraplegia occurring as a sequel of affections of the liver, additional examples will be detected by observers.

The manner of recovery from hepatic colic has not always been by the evacuation of calculi. I have frequently called your attention to the fact that we very often find, at the autopsy, numerous hepatic calculi in the bodies of individuals who for a long period had ceased to suffer from the symptoms which arise from the presence of biliary calculi.

When the cystic duct is closed by the impaction of a large calculus, inflammation of the gall-bladder is produced, and it becomes distended by the accumulation of mucus secreted in consequence of the inflamed condition of the mucous membrane. But the duration of this inflammation has a term: the secreted mucus is reabsorbed: the gall-bladder shrivels up, contracting upon the calculus: the pain, at first acute in the region of the gall-bladder, becomes more and more blunted: and the bile flowing freely through the choledoch duct, the health is perfectly re-established.

There are other cases in which we find the cystic duct obliterated by a pretty large concretion, and numerous calculi floating in the greenish mucus by which the gall-bladder is distended: tolerance is established: the inflammation of the gall-bladder comes to an end, and the calculi, ceasing to be engaged in the neck of the cystic duct, cease to cause pain. In cases of more unusual occurrence, such as that of which I have just been giving you the particulars, the distended and inflamed gall-bladder contracts adhesions with the omentum or the intestines, and becomes ruptured, whereupon the calculi, accompanied by the pus and bile, fall into, and become encysted in the cellular tissue of, the new formation, where they remain, in the midst of the tissues, without causing any untoward symptoms, forming an

accidental pouch having a fistulous communication with the ruptured gall-bladder. This was the state of matters in our patient of bed 28.

I have now to speak of the treatment of hepatic colic and biliary calculi. But a preliminary question presents itself!

An individual, let us suppose, has biliary calculi. Can we prevent him from having attacks of hepatic colic? When these attacks have declared themselves, can we hope to prevent them, by acting on the concretions which occasion them, so as to reduce them to fragments sufficiently small to traverse the cystic and choledoch ducts, without occasioning disagreeable consequences?

Were I to base my answers to these questions on my personal experience, I should reply in the negative. I am anxious, however, to add that my honorable colleague Dr. Barth, whose scientific authority is of the greatest weight, has published, in illustration of this subject, interesting cases apparently opposed to my views. Dr. Barth, indeed, believes that he has demonstrated that by the aid of particular medicines capable of imparting certain characters to the bile, the calculi in the gall-bladder may be acted on in such a way as to be disintegrated, and their passage into the intestine facilitated sufficiently to prevent hepatic colic being thereby produced.

This proposition has been maintained by other physicians, who, with the object of attaining the same result, have recommended the use of alcalies, which, if they have not, they say, a solvent action on the cholesterine, at least combine with the fatty constituents of the blood, and by saponifying them, carry them away, so as to prevent their being deposited from the bile: the alcalies, and mercury, they say, by dissolving the pus and mucus, prevent the formation of concretions, and disintegrate them if already formed, by depriving them of these two elements, so as to isolate the cholesterine and reduce it to small fragments.

Dissolving the calculi is the principle on which the famous remedy of Durande is based: it consists in giving the patients a mixture of sulphuric ether and essence of turpentine in the proportion of three parts of ether to two of turpentine. Quite recently, some physicians have seriously proposed the internal administration of chloroform, in consequence of M. Gobley having shown that hepatic calculi were more soluble in this than in any other menstruum.

You know, Gentlemen, what I think of the application of chemical theories to the physiological operations of the living body. These theories are entirely fallacious, even in the opinion of chemists them-

selves, in respect at least of the action of ether and turpentine, which in a test-tube and in direct contact with biliary calculi either do not dissolve them at all, or dissolve them very slowly; and which when introduced into the stomach never reach the gall-bladder. We can easily perceive that although solution may be effected in the test-tube by therein bringing the calculus into direct contact with the menstruum at a maximum strength, it would be absurd to suppose that the same end can be accomplished by bringing into contact with the calculi a diluted solvent essentially modified before reaching the liver.

I reject the chemical theories of the solution of hepatic calculi: I reject the chemical theories of the solution of renal calculi by the waters of Contrexéville, Vals, Pougues, or Vichy. Consequently, I deny that medicine can act on either kind of calculi once they are formed: that which medicine can accomplish, is their expulsion by exciting the biliary or urinary secretion, the products of which will tend to entangle the concretions which are formed. And medicine can in a special manner do good by preventing the formation of calculi, by subjecting the patient to a regular plan of treatment in which alcalies, chloroform, ether, and turpentine are the most efficacious agents.

So long as the biliary secretions remain normal, there is no greater tendency in the bile to deposit the solid matter which it holds in suspension, than there is in normal urine to deposit the phosphates, oxalates, or uric acid which it contains. Consequently, in the treatment of hepatic colic, our object ought to be to regulate the functions of the liver, just as we endeavour to regulate the functions of the kidney with a view to prevent the return of nephritic colic.

It is in response to this indication, that the waters of Pougues, Contrexéville, Vichy, Carlsbad, and Vals are so undoubtedly useful in the treatment of biliary and urinary gravel. Under the influence of this potent medication, if well-directed, patients get rid of the troublesome aptitude which they had contracted. But the benefit, I repeat, does not arise from the alcaline waters dissolving calculi already formed: they act in another way—they modify the constitution of the patient, and perhaps also the organs upon which they seem to have an action quite peculiar and special.

It is very necessary, however, to beware of abusing the alcaline system of treatment. When too long continued, it impairs digestion, and exhausts the constitution. The alcaline remedies I call "long-range" medicines, because they continue to act long after

their use has been discontinued. Thus, patients after passing a season at Vichy, Vals, Carlsbad, Pougues, or Contrexéville, remain for from six to ten months, or even longer, under the influence of the medication, and without experiencing any symptoms of their malady. It is, therefore, useless, to say the least of it, to keep up the alcaline treatment without intermission, a practice which I have too often seen.

Here is the manner in which I proceed. When an individual is subject to hepatic colic, I order him to take for eight consecutive days, once a month, one, or at the most two, glasses of the natural mineral alcaline water of Vichy or Pougues. After a week of the alcaline remedy, I direct him to remain for another week without taking any medicine. During the following week, he has to take immediately before each of the two principal meals of the day, the capsules containing ether, and the capsules containing turpentine of Dr. Clertan; or, he may himself fill the gelatinous capsules of Lehuby with ether or turpentine, in the proportion of two thirds of the former to one third of the latter. Each capsule contains nearly twelve drops of ether and six drops of turpentine. Of these capsules, the patient takes from two to four; and, according to his tolerance of them, the dose may be increased to ten or twelve in the twenty-four hours. Then follow eight days of abstinence from medicines: after which period, comes round the eight days of the alcaline waters. The treatment ought to be continued on this plan for four, five, or six months, even although all the symptoms should have disappeared.

My plan is, as you see, a combination of the use of alcalies with the remedy of Durande: the latter is modified only in respect of the mode of administration. The potion of ether and turpentine, in the form prescribed by Durande, has a very disagrecable taste, and turpentine administered according to his formula so greatly irritates the pharynx and œsophagus, as to make its long-continued use impossible. Therefore, gelatinous capsules which are easily swallowed, and do not dissolve till they have reached the stomach, have undoubted advantages. Many physicians, relying on the experiments of Gobley, now substitute chloroform for ether: there is no difference in the mode of administration. I need not say that the relative proportions of ether and chloroform on the one hand, and of turpentine on the other, may be varied according to the varying aptitudes of patients.

Diet occupies an important place in the treatment of calculous affection of the liver. Gentlemen, while I insist on the necessity of vegetable alimentation, I do not think that it ought to be prescribed to the exclusion of animal food: my opinion is, that there ought to be a judicious combination of animal and vegetable fare. Patients will prefer to eat herbaceous vegetables, avoiding butter, oil, and fatty substances, which are digested with difficulty by persons in whom the liver is at fault.

Regular exercise must also be insisted on: it promotes organic decompositions and compositions, and favours the combustion of the fatty matters of the economy.

When a paroxysm of hepatic colic sets in, I do not know of any really efficacious means of suppressing it. The only remedies which seem to me to procure some relief are ether and chloroform in small doses, belladonna administered internally, frictions over the seat of pain with extract of belladonna, and prolonged general baths.

The inhalation of chloroform produces surprising effects upon some patients. You no doubt remember a woman (bed 7), who on inhaling chloroform for half a minute was immediately relieved from very severe paroxysms of pain. The sedative effect of chloroform will sometimes continue for half an hour: on the return of the colic, the patient must recommence the inhalation, and pursue the same plan till the paroxysm has come to an end.

LECTURE LXXIX.

HYDATIC CYSTS OF THE LIVER.

Case occurring in a child six years of age.—Two cases in which Hydatid Cysts opened into the Thoracic Cavity.—Hydatids: their mode of development.—Hydatids of the Liver.—Symptoms.—At first, nothing characteristic, except sometimes the appearance of a Tumour in the region of the Liver.—General symptoms: Disturbance of the Digestive Functions: tendency to Hemorrhages and Gangrene.—Functional Disturbance of Neighbouring Organs.—Hepatitis.—Purulent Infection.—Spontaneous Opening of Cysts into different passages; through the abdominal walls; into the blood-vessels; into the biliary ducts; into the digestive canal; into the pleural cavity; and into the bronchial tubes. TREATMENT:—Simple Puncture with the Exploratory Trocar.—Puncture with the Permanent Canula.—Begin's Method of Successive Incisions.—Récamier's Method of opening by Caustics.—Opening the Cyst by the Trocar, after establishing adhesions by Acupuncture.—Iodised Injections.

Gentlemen:—Within the last few weeks, three cases of hydatid cysts of the liver have come under your notice.

One of them occurred in a little girl, six years of age, who was brought to our out-patients' consulting room. She had every appearance of a good constitution and perfect health; and according to her mother's account, never had had an illness. For some time, she had complained of pains in the right side, in which situation a certain amount of tumefaction had been perceived. The child, nevertheless, always appeared to be in her usual good health: there was no diminution in her natural cheerfulness: the appetite and digestion continued perfectly normal. The only indication of her being out of sorts was that her sleep, previously sound and calm, was disturbed by nightmare and precordial anxiety.

On examination, I ascertained that there was a tumour, limited on the left by the lower end of the sternum, and projecting under the margin of the costal cartilages. The size might be about that of a hen's egg. The skin over it was natural in colour. The tumour was not painful, except when strongly pressed, when slight pain was excited in it. On attentively looking at the tumour, it was observed to be the seat of regular pulsations, which were much more sensible when the finger was applied; they were synchronous with the pulsations of the heart and arteries, and were not movements of expansion, but movements of lifting *en masse*. They ceased, when the child was made to stoop forwards. During a deep inspiration, the tumour rose, to fall down again during expiration, following, thus, the movements of the diaphragm; this circumstance, combined with the seat, enabled me to say that the tumour was connected with the liver, which did not otherwise appear to be augmented in volume. The tumour evidently contained liquid; deep fluctuation could be felt, and in its upper part, there was very distinct crepitation.

I diagnosed a hydatid cyst of the liver—a diagnosis fully confirmed by the exploratory puncture which I caused to be made. The trocar gave exit to a liquid the first part of which was limpid, but the subsequent flow of which was sanguinolent, slightly turbid, containing gelatiniform foreign bodies which were the débris of hydatids.

The child having been at once taken away by her mother, I lost sight of her, so that the case has no other interest than the early age at which the affection presented itself.

You are aware that a hydatid affection—be its seat what it may—and the liver is the most common seat—is hardly ever met with except in individuals who have reached the middle of life or adolescence. It is equally rare in childhood and old-age: so true is this remark in respect of early life, that Dr. Davaine, in the most complete treatise on the subject which has appeared, has not been able to collect more than fourteen cases in subjects under fifteen years of age.

Half of the fourteen were cases of hydatid tumours of the liver developed in persons of twelve, ten, nine, and four years. In one case, which he quotes from Professor Cruveilhier, the subject was a child of *twelve days* old, in which were found only the débris of the cyst, which had opened into the descending colon. The seven other cases recorded in Dr. Davaine's work are cases of hydatids of the

heart, pericardium, orbit, canine fossa of superior maxilla, kidneys, and lungs.

If to these fourteen cases, you add two cases of hydatids of the thoracic cavity which Dr. Henri Roger communicated to the *Société de Médecine des Hôpitaux de Paris*, on 9th October, 1861, another example of hydatids of the liver presented to the Société Anatomique by M. Descroizilles; and, finally, the case of our little patient, you have the sum total of the cases published or known of hydatids in children. They are in number eighteen, and nine of them are cases of hydatid tumours of the liver.

A few of you only, I presume, have seen the patient regarding whose case I am now going to speak. He was in another service of this hospital: I knew nothing of him when he was living; but I derived some knowledge of his case from being present at his autopsy. The particulars of his case furnished to me are sufficient to show how numerous are the difficulties surrounding the diagnosis of hydatid cysts of the liver, when there has not been an opportunity of observing their development and evolution for at least a certain time.

The man to whom I refer was for two or three months in the ward Sainte-Jeanne: he presented all the signs of extensive effusion into the right side of the chest. The thoracic development of that side, the complete dulness, the blowing sound, the egophony, and the broncho-egophony left no room to doubt the presence of fluid in the pleural cavity. After some weeks, the patient, feeling better, expressed his wish to return home, although there did not seem to be any real modification of the chest symptoms. He left the hospital, but was very soon obliged to return. He was then expectorating yellow matter, in which bile could be recognised. Hence was inferred the existence of a communication between the lung and the liver. The symptoms assumed an exceedingly serious character, and proceeded to a fatal issue. During the last days of this man's life, his breath and sputa were horribly fœtid, suggesting the idea of hydropneumothorax opening into the bronchi, and the contained fluid was altered in character by the presence of air.

At the autopsy, there was found in the liver an enormous cyst still containing some acephalocysts; it had opened into the bronchial

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[1] Davaine:—Traité des Entozoaries et des Maladies Vermineuses de l'Homme et des Animaux Domestiques. Paris: 1860.

passage through a gangrenous portion of pulmonary tissue. The pleuritic effusion recognised during life still existed; and, curious to relate, there was no communication between this effusion and the bronchi. You now understand why it was impossible, when the patient was alive, to diagnose what had occurred, to know that the pleurisy, occasioned in all probability by the cyst, was, nevertheless, independent of it. You are now, also able to understand why it was impossible to ascertain the existence of the cyst of the liver, which occupied its convex surface, without causing that organ in the least degree to be abnormally salient.

I have now to speak of the young man whose case is the occasion of the present lecture. The patient occupied bed 12 of St. Agnes's ward. You recollect my remark in the presence of my honorable colleague Dr. Legroux, just as I was going to make an exploratory puncture in the right hypochondriac region to complete the diagnosis which I had formed from the nature of the tumour projecting into the abdomen.

I said that there spurted from the puncture made by the exploratory trocar, a transparent limpid fluid, which yielded no precipitate of albumen when treated by heat and nitric acid. This fluid contained the débris of hydatids, which by obstructing the canula prevented the flow from being as abundant as it might otherwise have been. This experiment incontestably demonstrated to us that the tumour, apparently belonging to the liver, and which occupied its convex surface, was really a hydatid cyst.

This man, who had just made the Crimean campaign, had been discharged from the army. Before his departure for the East, when in garrison at Auxonne in the department of Côte-d'Or, he had complained of pains in the right side: but as these pains were dull, and did not wake up except when he made a forced march or had some kind of violent exercise, and as his health remained good, he was able to continue to perform his duty, and, consequently, went to the Crimea. During the whole of that trying campaign, he remained at his post, and underwent the severe fatigues to which our expeditionary force was subjected. From time to time, however, the pain in the right side became aggravated; and then it was that the patient perceived a notable swelling in the situation of the pain. This caused him to consult the surgeon of his regiment, who did not attach great importance to what he saw, particularly because the man's general health was unexceptionable.

When the war was at an end, the young man received his discharge. Tormented by the inveteracy of the symptoms, which were complicated by attacks of fever recurring with pretty well marked periodicity, he resolved to seek admission into an hospital; and thus it was that he came into our hands.

On the occasion of my first examining him, I was struck with the very decided fulness of the right side of the chest, which presented a globular projection, and occupied the whole of the corresponding hypochondrium, extending to the epigastric region. These appearances at once gave characteristic evidence of the existence of the hydatid cyst of the liver.

If not to a hydatid cyst, to what could the tumour in the right side be attributed? No doubt, the amplitude of the chest might be ascribed to thoracic effusion; but then it would be necessary to regard the effusion as completely encysted, as the fulness was exactly circumscribed below. Now, *encysted* is not the most common form of pleurisy. On the other hand, this theory would have made it necessary to assume that the walls of the cyst were so rigid that the pressure of the fluid had more easily overcome the obstacle formed by the thoracic walls than that formed by the lung—an inadmissible hypothesis. In encysted pleurisies, the lung, the mediastinum, the heart, the diaphragm, are pushed out of the way long before the ribs are interfered with. I repeat, moreover, that the bulge of the ribs is uniform throughout the whole extent of the thoracic cage of the corresponding side, and not merely in a limited space as in this case. The view that thoracic effusion existed was, therefore, inadmissible.

The development of the precordial region made it more probable that the affection was intra-abdominal, and its situation being the right side, the liver was clearly pointed to as the seat of disease.

What was the nature of the lesion? Was it cancer? The patient was of an age at which carcinomatous affections seldom occur. His general health seemed to be but slightly affected by the local disease, which, moreover, was so extensive that we could hardly suppose that, were it cancer, it would not have occasioned more severe pains. Finally, with the enormous volume which the tumour presented, we should, in cancer, have felt a nodulated surface of the liver, in place of finding the organ with so even an increase of size.

The fluctuation produced—particularly that produced on exploring the neighbouring epigastric region—was not the false fluctuation sometimes met with in cancer, but was evidently due to the presence of a fluid. The progress of the symptoms, and the very disposition of the affected parts did not allow me to be satisfied with thinking that that fluid was pus, and that we had to do with an abscess of the liver.

In fact, the diagnosis finally settled was that which I formed in the first instance, and which the exploratory puncture had amply confirmed. We found that we had to do do with a cyst of the liver: this cyst occupied the convex aspect of the organ. When pressed between the body of the gland (which, supported by the abdominal viscera was prevented from retreating beyond a certain limit) and the right lung, (the elastic force of which also opposed a certain obstacle to its development,) the cyst had exerted all its efforts upon the walls of the chest, causing them to bulge out in the manner we had observed.

Having established the diagnosis, the question was:—What are the therapeutic indications? In such a case, I could not leave the patient to the unaided efforts of nature; for, although, in certain exceptional circumstances, hydatid cysts of the liver have undergone spontaneous cure, this result has assuredly not occurred in cases similar to that which we had under our observation. Sooner or later, cysts of the large size presented in the case now under consideration, lead to very serious consequences, and the event which we had above all others to fear in our case was rupture of the cyst into the abdominal or thoracic cavity, which would have led to a speedily fatal peritonitis or pleurisy. Interference was obligatory; and the only chance of useful interference was a surgical operation. I therefore proposed to empty the cyst.

Following the established principles of the surgical art, I first endeavoured to establish adhesions between the tumour of the liver and the abdominal walls, so as to prevent the fluid from flowing into the peritoneum when I opened the cyst. I shall explain to you, Gentlemen, the proceedings adopted in such a case. For the present, that I may keep to the case actually before us, I shall be satisfied merely to mention that I had recourse to multiplied acupuncture for the accomplishment of my object. This kind of acupuncture consists in burying in the tumour—piercing the skin previously protected by a small piece of linen, leather, or caouchouc—thirty or

forty needles arranged in a circle with about half a centimeter between each of them. These needles must be provided with sealing-wax heads.

I was waiting the result of this operation when complications supervened, excited perhaps by the proceedings which I had adopted. The fever, which from the time the man came into the hospital had been showing itself at intervals, all at once assumed a very formidable character, and was accompanied by acute pain in the right side of the chest. I discovered that there was pleurisy with effusion, characterised by dulness in the thoracic region and egophony, phenomena, which, day by day, became more marked. The dulness extended to the infra-spinous fossa of the scapula: the egophony reached as high up as the eighth rib: above there was bronchophony. Still higher up, fine subcrepitant râles were heard. The expectoration was catarrhal.

On uncovering the chest, a great separation was perceived between the ninth and tenth ribs, with a bulging of the integuments in the same situation. When the patient coughed or made an expiratory effort, there was an increase in the bulging, just as if a liquid were raising the skin. On applying the hand, fluctuation was felt. I asked myself, whether this fluctuation was referable to the cyst, which, after separating the muscular fibres of the diaphragm, had passed into the thorax, and had thus simulated the effusion of which I found the signs.

The subcrepitant râles, however, became finer and finer, and were heard on the left, as well as on the right side: the sputa assumed the pneumonic character, so that if the chest symptoms which I had seen become developed on the right side, could up to a certain point, have been set down to the account of the cyst, those on the left side could not be similarly accounted for. I said to myself:—The acupuncture has produced inflammation in the cyst, and also in the parenchyma of the liver itself, as may be inferred from the subicteric tinge of the skin, which had appeared coincidently with increase of the fever. The inflammation (the cyst having perforated the diaphragm) was propagated to the pleura; and perhaps there was some effusion into the chest in addition to that which I attributed to the cyst. But I also said, it was surprising that the inflammation propagated to the pleura had respected the peritoneum, for I found no sign of peritonitis. In vain I sought to explain the bronchitis characterised by the subcrepitant râles: the solution of this question was all the

more embarrassing that the left as well as the right lung was equally implicated.

The bronchial affection of the right side might be quite well accounted for by supposing that a communication had been established between the cyst and the lung; but no such hypothesis was admissible in respect of the left side.

For every reason, I saw that I could not operate upon the cyst. The case was exceedingly complicated by the thoracic symptoms whatever might be their starting point. The symptoms continuing stationary, I decided upon opening the tumour, which was salient in the intercostal space. This I did by means of a pretty large trocar, giving issue to purulent fluid containing hydatids.

For two days, nothing occurred which could be regarded as announcing what was going to happen; nor was the patient's state worse. When seen at 4 o'clock in the afternoon, it had been ascertained that there was an abundant discharge of pus from the wound: at ten p.m., and again at midnight, the sister of the service found him very calm; but about one in the morning, he was seized with a fit of coughing which nothing could stop: in the midst of the anxiety and suffocation which accompanied the paroxysms of cough, he exclaimed that he was being suffocated and was dying. A few minutes afterwards he died.

I thought that the cyst had burst into the lung, and that the suffocation had been caused by the hydatids getting into the air-passages. The autopsy shows us that no such thing had occurred; and that disorders had existed which we had failed to recognise during life.

Here is the dead body. By the opening which I made in the intercostal tumour, I introduce a sound which you see passes into the liver through the costal and diaphragmatic pleuræ, which, observe, are firmly united by old adhesions. The liver is enormously enlarged, and I have to traverse its parenchyma to reach the cyst.

Above the diaphragm you observe, there is effusion; and the pleural cavity containing it, communicates at one part with the cyst in the liver, and at another with the bronchi, the pulmonary tissue being perforated. Here, therefore, we have hydro-pneumothorax.

Gentlemen, in connection with the three cases which I have now related, I propose to-day rapidly to sketch the history of hydatid cysts of the liver.

It is not till the beginning of this century that we find in the

writings of physicians the first tolerably accurate notions regarding this singular affection. In 1804, Laennec published his work upon vesicular worms, among which he classed hydatids, and called them acephalocysts.[1] In 1843, Dr. Livois[2], a pupil of Dr. Rayer, arrived at the following conclusions :—First ; that hydatids ought to be excluded from the class of vesicular worms ; and second ; that they are simple pouches always containing echinococci in number proportionate to the size of the containing pouch.

These conclusions are now generally accepted : but there is not the same concurrence of opinion as to the relations which hydatids bear to echinocoqui. This point in natural history does not come within the limits of my present subject ; and in relation to it, I cannot do better than refer you, for complete information, to the remarkable work of Dr. Davaine, of which I spoke at the beginning of this lecture. Let me merely add, that in the opinion of the savant whom I have just named :—"*the hydatid corresponds to a phase in the development of an animal which lives a certain period, and may be produced a certain number of times under the vesicular form : the echinococcus presents a more advanced phase in the development of the same animal.*"

The most important points upon which we, as physicians, require to be informed, are the phenomena by which hydatids betray their presence in organs, the symptoms to which they give rise, and the treatment which the affection demands.

In man, cysts may be developed in all the parenchymatous organs. The liver seems to be the favourite locality : when cysts are found in other organs, it is very unusual for them to be absent from the liver. After the liver, the next most frequent seat of hydatids is the lung : then come the kidneys, spleen, omentum, brain, and pelvis. There are, according to Dr. Davaine, some examples of their being found in the spinal canal, in the eye, and in the bones. I shall borrow pretty exactly from his work the description which I am now going to give you.

Whatever be the situation which hydatids occupy, they are "in their state of integrity, round vesicules formed of a substance similar to coagulated albumen, containing a limpid fluid, and free from any adhesion or connection with the organ in which they are

[1] Laennec :—Mémoires de la Société de Médecine de Paris.

[2] Livois :—Recherches sur les Echinocoques chez l'Homme et chez les Animaux.

enclosed. They almost invariably contain echinococci, which are either adherent to their internal surface, or floating free in the hydatid fluid."

Sometimes, they are scarcely visible to the naked eye: at other times, they are as large as the head of a fœtus at the full term. Generally, however, they vary in size between that of a pea, a large hazel-nut, or an orange.

Their form, at first spheroidal or oval, is often modified by the pressure exerted upon them by the parts amid which they originate: their walls, the uniform thickness of which is proportionate to the volume of the vesicule, are colourless, transparent, or of an opaline tint at some points, or throughout a greater or less extent of their surface. Accidental circumstances, such as contact with a coloured fluid, the bile for example, may modify the colour.

It is not unusual to find along with one large hydatid, several small ones. It is still more common for one large hydatid to contain small hydatids, free in its cavity, or sometimes adherent to its internal or external surface. Originating like granulations, they spring up, increase in size, become hollow, and ere long are detached.

When developed within natural serous cavities, or in veins, hydatids do not seem to have any other envelope than that formed by the walls of the cavity in which they are enclosed: when developed in parenchymata, they are surrounded by an adherent membrane, by a cyst formed at the expense of the cellular tissue of the parenchymatous organ, and the structure of which varies with that of the organ. This membrane, exclusively cellular at first, progressively assumes a fibrous, and fibro-cartilaginous consistence; and in old cysts may be seen disseminated nodules, cretaceous patches, apparently osseous. Their walls vary in thickness according to their age. The cysts are united to the neighbouring parts, sometimes by very loose cellular tissue, and sometimes by fibrous adhesions which are solid and difficult to destroy. They may receive blood-vessels which spread over their surface, sometimes penetrate into their interior, and in old cysts reach their inner surface, there assuming a varicose aspect, or an appearance of being surrounded in their course by a real sanguineous injection: the inner surface is then like shagreen, wrinkled, and covered with exudation more or less adherent or thick, while in recent cysts it is white, to a certain extent resembling a serous membrane.

The hydatid cyst is generally globular, and is seldom composed of distinct compartments: when multilocular, this structure is derived from the fusion of many cysts, or by the hydatid cyst having encountered obstacles to its uniform growth, in which case, if the hydatid be single, it sends prolongations into the different compartments.

A very variable number of hydatids may be contained within a single cyst; and they have often been found to amount to five hundred, a thousand—even to seven, eight, or nine thousand. The tumour in such cases may attain a size equal to that of a man's head.

When the cyst only contains a single hydatid, that hydatid generally fills the cyst entirely, and forms a covering to its walls; when the cyst contains several hydatids, there is more or less fluid in which they float.

This fluid, which is transparent like that of hydatids, contains no traces of albumen, and is neither coagulable by heat nor nitric acid. However, when a hydatid cyst has been punctured several times, an albuminous fluid comes from the last punctures; but this is a new product secreted by the cyst itself, and is not the peculiar fluid of the hydatid. The fluid in the principal pouch may, like that of the therein contained hydatids, accidentally assume different colours, a yellow, greenish, or redish colour, from admixture with bile or blood. Not unfrequently, it becomes opaline, muddy, and thick, so as to resemble pus. Indeed, in many cases, it is a purulent fluid originating in inflammation of the cyst: in other cases, the fluid is only purulent in appearance, and is a serosity, holding in suspense sebaceous matter.

This sebaceous matter, which has also been compared to tuberculous matter, is deposited in layers on the internal surface of the cyst when the enclosed hydatid is single, or when, being multiple, its walls are directly applied, without the interposition of any fluid, to the walls of the cyst. By degrees, it grows thicker, assuming the appearance of concrete mastic, or sometimes of chalk. Under such circumstances, the hydatids become reduced to a few membranous shreds, and finally disappear: the echinococci, which have long before been destroyed, are then represented only by their tenacula.

Hydatid tumours thus transformed were, continues Dr. Davaine, formerly called *atheromatous*. The state resembling pus or tubercle, is, according to his view, merely a less advanced stage of atheroma-

tous transformation, of which the cretaceous stage is the last; so that in cases of multiple hydatids, we are able to observe the different phases of change in the same individual.

Gentlemen, a minute or two ago, I reminded you of a fact admitted by all observers, that the liver is the favourite locality chosen by hydatids. It is, moreover, specially regarding *hydatid cysts of the liver,* that I wish to address you upon the present occasion. In one of my lectures [Lecture XXXIV, vol. III] I spoke to you about hydatids of the lung, in relation to the case of a young man who was in St. Agnes's ward.

In the liver itself, hydatids prefer certain localities: they are more commonly met with in the right than in the left lobe, and in the convex, than in the concave part of the organ. There is sometimes only one; pretty often there are two, three, or more hydatids: but their number seldom exceeds five or six.

The cysts are developed very slowly; and as they often lead to no functional disturbance till they have attained a certain bulk, it is not unusual for the affection, which had never in any way showed itself during life, to be only accidentally discovered after death in persons who have died from totally different diseases. The cysts may take from two to twenty or even thirty years to be developed; and even then, though very large, they may only occasion feelings rather of discomfort, weight, and distension in the right side, than of real pain.

Our patient of St. Agnes's ward told us, that he had been able to go through the Crimean campaign, working at the trenches like his comrades, and taking part in the battles before Sebastopol, without ever having been in hospital. At that time, however, he was feeling a dull pain in the right side, which was sufficiently tumefied to cause the clothes to press unpleasantly in that situation: this pain was increased by fatigue, but it had never attained great severity.

The painful sensations, then, were felt in the right hypochondrium, the epigastrium, and often in the right shoulder.

The symptoms, you see, are so little characteristic that it is very difficult, if not quite impossible, to diagnose cysts of the liver. But when the cyst has attained a large size, and has caused the side-wall of the abdomen to project, the form of the tumour and its concomitant phenomena often furnish the attentive observer with sufficient diagnostic data.

The tumour, growing slowly, occasioning no sensations strictly

entitled to be called pains, accompanied by no state of fever, nor by any disturbance of the general health, is generally globular, and raises up in a uniform manner the thoracic and abdominal parietes beneath which it is situated. On percussion, it yields a dull sound: to pressure with the finger, it offers an elastic resistance, and a feeling of fluctuation, which is deep-seated, and sometimes so obscure as to be very difficult to detect. Sometimes also, there is produced a peculiar purring, which has been called hydatid purring [*frémissement hydatique*]. It was first described by Dr. Briançon (of Tournon) in his inaugural thesis[1]: this is a sign of great value, and when it exists, may be looked upon as pathognomonic. Unfortunately, it is, in general, not to be found, however carefully it may be sought for: frequently, also, after having been perceived for some time, it ceases. Dr. Briançon announced his belief that the intensity of the hydatid purring was proportionate to the quantity of acephalocysts and of fluid contained in the cyst; and that the more numerous the hydatids, and the more abundant the fluid, the more sensible was the purring. Its cause is not quite understood; but this we know, that the purring may exist when there is only a single hydatid, as was ascertained by Professor Jobert in a case of tumour in the region of the deltoid.

I have said that hydatid cysts of the liver are slowly developed, and may sometimes exist in an organ without occasioning any disturbance of the economy. Such cases are reported in Dr. Davaine's work, but they are exceptional; and however slow may be the progress of this as compared with other chronic diseases, it is in reality rather rapid, because, as a general rule, its maximum duration seldom exceeds four or five years.

I have also told you, that cysts, even when of large size, may lead to no other symptoms than dull pains, a feeling of weight, uneasiness, and distension in the affected side. It is difficult, however, to understand how an organ of so much importance as the liver should be more or less implicated for a long period without the occurrence of serious disorders of the economy.

As the tumour, slow in its development, continues limited to a relatively small portion of the organ, the larger unaffected remainder is amply sufficient to perform the functions of the gland.

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[1] Briançon:—Essai sur le Diagnostic et le Traitement des Acéphalocystes. [Thèse de 1828.]

But when nearly the entire liver is invaded by a single cyst (of which cases are reported), or by multiple cysts—when the cysts have rapidly attained a great volume—when this pathological change has caused its effects upon the system—when, finally, by their bulk they impede the passage of the bile through the excretory ducts—the result is the production of serious local and general symptoms.

The general disorders produced consist in functional disturbance of the digestive organs. The appetite diminishes, and is lost: digestion is slow and difficult: at intervals, nausea, vomiting, and diarrhœa supervene. Emaciation and loss of colour proclaim the cachectic state into which the individual has fallen. There has also been mentioned as occurring in these circumstances *a tendency to hemorrhages*, a very common complication of serious hepatic affections: it occurs in the form of repeated and profuse epistaxis—in women, of attacks of epistaxis and metrorrhagia. According to Dr. Davaine, a *tendency to gangrene* has also been observed. He says that gangrene of the lungs not unfrequently carries off patients who have large cysts in the liver.

Although *jaundice* is an unusual symptom in hydatid cysts of the liver, it is sometimes met with, though some physicians maintain the contrary. It may be more or less intense, more or less deep in colour, the result sometimes of inflammation of the substance of the liver itself, sometimes of an obstacle to the passage of the bile through the biliary ducts compressed by a cystic tumour, which compression may also lead to partial or total atrophy of the gall-bladder. Jaundice may also be produced by the hydatids getting into and obliterating the biliary ducts, an occurrence of which I mentioned two examples when lecturing upon hepatic colic: one of these cases, I derived from the practice of my friend Dr. Lasègue, and the other, which I observed in our St. Bernard's ward, is one to which I shall have forthwith to call your attention. There may also be jaundice depending upon complete destruction of the biliary ducts and gall-bladder.

There are also other symptoms, which may be consequent upon mechanical interference with the play of the organs abnormally affected by the presence of hydatid tumours.

The growth of a large cyst in the abdomen may push the stomach out of its place, and press down the intestinal mass to the right iliac crest. Even when the tumour is not very large, it may compress the principal venous trunks, the vena porta and vena cava inferior,

thereby producing ascites and œdema of the inferior extremities. These complications, however, are exceptional occurrences in the disease of which I am speaking.

A hydatid cyst forming on the convex surface of the liver, and attaining a great size, will squeeze up the diaphragm into the chest, displacing the lungs and heart: then, again, sometimes, by ascending as high as the second rib and the clavicle, it will simulate a pleuritic effusion, greatly embarrassing the respiration and cardiac circulation. I say nothing at present of those cases in which the tumour, separating or destroying the fibres of the diaphragm, penetrates directly into the pleural cavity: this is a subject to which I shall have to return when I come to discuss the communications which may be formed between hydatid cysts and the respiratory apparatus.

I have mentioned *hepatitis* as one of the complications of the hydatid affection of the liver. This inflammation, more or less acute, more or less extensive, is excited by the presence of a very large cyst, or by the very rapid development of the tumour: it may supervene either accidentally, or as the result of any external violence, such as a muscular effort of the patient, a blow on the seat of the disease, an exploratory puncture, acupuncture, the application of caustic, or any other operation performed with a view to accomplish a cure.

This inflammation often ends in suppuration, and in some cases invades the veins. The phlebitis is sometimes caused by the introduction of septic matter into the blood-vessels. In certain cases, indeed, the hydatid cysts have opened into the vena cava, and in others, they have not only opened into branches of that vein, but have likewise opened into vessels of new formation to be seen ramifying on the surface of the tumour. In these cases, the patients die from the effects of purulent infection.

Whether originating spontaneously, excited by accidental causes or surgical manipulations, the inflammation may remain confined to the cyst, which will then be transformed into a real abscess. This is one of the terminations, perhaps not unusual, of hydatid cysts of the liver.

When suppuration of the cyst takes place, it is either occasioned by a sort of putrid fermentation developed within its cavity by the presence of hydatids killed by an operation, or by the irritation which the instrument has set up in the parts occupied by the tumour, and propagated to its interior.

This suppurative inflammation is always announced by very violent fever, and by acute pains in the region of the malady, in place of the dull pains which alone were previously experienced by the patient. There is also, at the same time, in the majority of cases, a subicteric tinge, and sometimes a very deep-coloured jaundice indicating that the parenchyma of the liver is involved in the inflammation.

Gentlemen, I attach great importance to suppurative inflammation as a termination of hydatid cysts of the liver; and in relation to this subject, I must relate a remarkable case communicated to me by Dr. Laboulbène, one of my colleagues in the hospitals; and afterwards I shall recall to your remembrance the details of another case—one to which I have already alluded, and which was observed by you in our clinical wards.

Dr. Laboulbène's patient was a man of fifty-two years of age, who, on 1st September, came into the Hôtel-Dieu, where he was placed in bed 23 of the Sainte-Madeleine ward. He said that he had been ill for eighteen days, but that up to that date, he had enjoyed excellent health. When at his usual work as a day-labourer, he was all at once—without having had a fall or a blow—seized with pain in the transverse arch of the colon. Thrice he purged himself, although he experienced neither gastric uneasiness, diarrhœa, constipation, nor vomiting. As the pain increased in severity so much as to oblige him to keep his bed, he came into the hospital.

On his admission, Dr. Laboulbène was struck with the typhoid aspect of his countenance. His decubitus was dorsal, and his eyes were injected. However, he neither complained of headache, nor of vertigo, even when he was made to sit up; but his tongue was thickly coated, dry, and blackish. He had burning thirst, and no appetite: he had no tendency to vomit. There was some fulness, but not much tension of the abdomen, nor any gurgling in the right iliac fossa. There was no trace of pink lenticular spots. The right hypochondriac region was slightly painful, and there could be detected enlargement of the liver, which ascended almost to the nipple, and descended about four finger-breadths below the false ribs, without presenting any projections or inequalities. The spleen only exceeded by nine or ten centimeters its normal volume. The patient was feverish, his skin was hot, and his pulse 100. Nothing abnormal was discovered in the condition of the heart or lungs.

The sclerotic had a slightly jaundiced tinge; but the urine

was natural in colour, and contained neither biliverdin, albumen, nor glucose.

Dr. Laboulbène prescribed tonic treatment, of which quinine wine constituted the most important part.

Some days later, the patient had a shivering fit towards evening. The typhoid condition was increasing: diarrhœa had supervened, and continued persistent: the abdomen was tympanitic: and the tongue was as dry as a bit of cork. The rigors in the evening, and the whole symptoms considered collectively, were much more characteristic of purulent infection than of typhoid fever.

On the 8th September, the patient lost a few drops of blood from the nose: his state had been getting worse and worse every day. He died during the night.

At the autopsy, Dr. Laboulbène found the liver enlarged, and adherent to the anterior and inferior surface of the diaphragm. The tissue of the upper part of the right lobe was soft: and in that situation, a cyst which did not protrude beyond the surface of the organ, profusely discharged a whitish yellow fluid having a purulent appearance, and containing very numerous bodies resembling transparent capsules of gelatine. Dr. Davaine found that this fluid was composed of white pus-corpuscles and very distinctive mucinous globules.

When the gelatinous bodies were cut in thin slices, they presented in the field of the microscope the characteristic appearances of the peculiar membrane of hydatids. Stratified layers were seen presenting an appearance like the transverse section of superimposed thin strips of oil-silk. Dr. Davaine found no trace of echinococci nor tenacula. The hydatids were destitute of the germinal membrane on which these entozoa germinate before becoming free. In this case, therefore, we had to do with *hydatids arrested in the first stage of their development.*

The internal surface of the cyst was lined by a slightly adherent false membrane, which was tinged with bile in several places. Some parts of this membrane were thick and fibrous. On removing them Dr. Laboulbène detected on the surface and in the thickness of the walls of the cyst, ramifications of veins and biliary ducts. The veins were large and tortuous.

On the anterior surface of the liver, near the falciform ligament, Dr. Laboulbène found several abscesses varying in size and resembling metastatic abscesses. Their internal wall was formed by

the tissue of the liver itself. The purulent fluid which they contained was, in some cases, coloured by bile, which exuded from bile-ducts, which M. Davaine ascertained, opened into some of the abscesses. There were similar purulent collections in the left lobe of the liver.

One of the branches of the vena cava contained an adherent clot which extended into the most minute ramifications of the vessel; and in one of the afferent veins, there was a tubulated false membrane filled with pus, which exuded when the tube was pressed.

Throughout its entire length, the intestine was injected, but not at all ulcerated.

There were no metastatic abscesses in the lungs or spleen.

Should the hydatid cyst, from becoming an abscess, or from attaining a very large size, have a tendency to burst, the time will come when its contained fluid will open a passage for itself through the neighbouring tissues. This passage will sometimes be outwards, through the abdominal walls, after the manner of hepatic abscesses and biliary tumours: when the adhesions naturally established between the walls of the tumour and the parietal peritoneum prevent effusion of the fluid into the peritoneal cavity, there exist the conditions which are most favourable for the ultimate cure of the cyst—the very conditions we endeavour to induce artificially as means of treatment.

Hydatid tumours situated on the concave surface of the liver may open spontaneously into the abdomen, either into the peritoneum (occasioning rapidly fatal inflammation), into the blood-vessels, biliary ducts, stomach, or intestinal canal, which latter is the most propitious mode.

I must now occupy a minute or two in calling your attention to these peculiarities.

I shall not revert to the communication existing between the veins and the hydatid cysts and the liver. Let it suffice to tell you the possibility of such an occurrence, and the nature of the results which may ensue.

Hydatid tumours open into the biliary passages by ulceration of their walls, consequent upon compression by the tumour. The vesicules become engaged in the biliary passages. The small hydatids first introduce themselves into the passages, and are then constantly propelled onwards by the bile secreted behind them, so that they pass on from the branches into the large trunks, and ultimately

enter the intestinal canal. Should they be very small in size, they are easily expelled; but if larger, they make their way more slowly, and the accumulation of bile which they cause produces dilatation of the passages. This dilatation allows larger hydatids to enter, which in their turn perform the same transit. The same thing occurs which takes place in the case of biliary calculi; the symptoms are nearly the same in respect of pain, jaundice, and pale colour of fæces, with this exception, that the pain is less acute. On examining the stools, we find that they contain the débris of acephalocysts, and even entire hydatids. Communication may be established directly between the tumour and the choledoch duct, or between the tumour and the gall bladder, within which latter hydatids have been found. Like biliary calculi, hydatids engaged in the hepatic or choledoch ducts may cause retention of bile; but in these cases, the nature of the malady usually remains undiscovered till an examination of the evacuations has conclusively established the diagnosis.

It sometimes happens, that the bile passes into the cavity of the tumour through the communication formed between the biliary ducts and the hydatid cysts. At the autopsy, in such cases, we find that the hydatids are broken up, empty, and more or less yellow in colour. It is probable, that prolonged contact with the bile causes death of the hydatids; and we shall see that it has been proposed to utilise this fact as a means of cure by injecting ox-bile into the hydatid cysts, a proceeding which (to say the least of it) is strange.

Finally, the spontaneous rupture of hydatid tumours of the liver into the biliary passages does not of necessity lead to fatal complications: it is sometimes a favorable termination of the affection. But fortunate issues are in other ways numerous when a communication has been established between the cysts and the intestinal canal, although in the one case as in the other, the evacuation of the fluid contained in the tumour proceeds very slowly, so that several months may be required for its completion; although it may also happen, that the very narrow opening being insufficient to allow the contents of the cyst to pass, other openings form, by which the fluid is discharged simultaneously into the intestine, into some other organ, or externally.

To enable the communication to become established with the stomach—by far the rarest and least favourable mode of opening—or with the duodenum, ascending, or transverse colon—the most usual and also the most favourable mode of opening—it is essential that

the tumour should have contracted adhesions with the organs into which it is to discharge itself. If these adhesions have not been formed, there will be danger of the cysts suddenly bursting into the peritoneum, and the production thereby of peritonitis proving fatal within a few hours. These adhesions are the results of an inflammatory process by which the serous coverings of the cysts and the intestinal tubes become glued to one another. They are formed exactly in the same manner as in cases of abscess of the iliac fossa, or of the broad ligament, when the abscess opens into the intestinal canal or bladder. On a future occasion, I shall have to tell you that this is a mode of termination of iliac and pelvic abscesses which is very frequently met with in practice: when left to the unaided efforts of nature, they almost always undergo spontaneous cure.

The flattening, or disappearance of the tumour which formerly was prominent in the right hypochondriac region and towards the epigastrium, sometimes a peculiar sensation experienced by the patient, the vomiting of purulent matter at first free from fœtor, but soon becoming fœtid and containing hydatids or the débris of hydatids are phenomena which indicate that the cyst has opened into the stomach. The presence in the stools of hydatids, or their membranes, announces that the opening has formed into the duodenum or colon. In the latter case, which I repeat, is the most usual, matters proceed without any complication: if profuse diarrhœa supervene, it does not continue long, and on washing the excreta, there are found not only small hydatids, but sometimes also the mother hydatid which resembles a false membrane of greater or less dimensions. The evacuation of hydatid cysts of the liver may take place simultaneously both into the stomach and into some other part of the intestinal canal; but again I repeat, that no mode of termination is more propitious than the entire evacuation taking place into the large intestine.

When the hydatid cyst is developed upon the convex surface of the liver, it is, to a greater or less extent, pushed down into the abdominal cavity, where it displaces the mass of intestines: the diaphragm is powerfully squeezed up into the chest. The tumour may in this way be caused to ascend as high as the fourth rib, as the second rib, or even as the clavicle, pushing aside the lung: respiration is greatly embarrassed, because both the diaphragm and the lung are peculiarly impeded in the performance of their functions.

Whether the muscle has remained intact, or whether its fibres, as

a consequence of pressure, have disappeared from a more or less extensive surface, a perforation may occur, affording passage to the tumour: the presence of the hydatid cyst in the chest often induces effusion, physical signs of which are furnished by auscultation and percussion; viz., complete dulness, absence of respiratory murmur, and sometimes egophony, if, as very often happens, there exist at the same time, a little effusion into the pleura.

By an attentive examination, however, differences can be established which will assist the diagnosis. Thus, the dulness is usually limited to a certain space: its extent varies so much that on percussing, for example, along the vertebral column, the dulness is found to be complete, whereas beyond it, on the same level, on the lateral wall of the chest, a sonorous sound is heard whatever position the patient is made to assume: or again, it is beyond that that the dulness is absolute, while along the spine, the sound is clear and the vesicular murmur is audible. No doubt, this circumscribed dulness may be indicative of an encysted pleurisy: but in the first place, that is an unusual form of pleurisy, and secondly, it does not give rise to that peculiar kind of deformity which the chest generally acquires in cases of hydatid tumours—a circumscribed globular deformity extending to the hepatic region. There is no longer any ground for hesitation: besides the fact of the liver being down in the abdomen, deep-seated fluctuation is perceptible on a line with the margin of the false ribs, particularly when there exists an hydatid purring tremor. An exploratory puncture will speedily remove any remaining doubts as to the nature of the affection.

We can understand that when a true pleuritic effusion takes place under the influence of the irritation caused by the presence of the tumour in the pleural cavity, the differential diagnosis becomes impossible.

In the cases of perforation of the diaphragm to which I have alluded, as being consecutive to disappearance of the muscular fibres under long continued pressure by the hydatid cyst—in these cases, I say, that the tumour of the liver may contract adhesions with the lung, and then, by bursting, form a communication with it. The symptoms of the pulmonary affection, or rather their meaning, is usually not understood until the accidental pulmonary cavity communicates with the bronchial tubes, and so enables the expectoration to furnish diagnostic proof. This proof consists in the presence of hydatids and débris of hydatids; or perhaps, the sputa are mingled

with bile, which makes it manifest that the seat of the tumour is in the parenchyma of the liver.

The establishment of this communication between hydatid cysts of the liver and the bronchial tubes is frequently the happy means employed by nature for accomplishing a complete cure, as is shown by numerous cases which have been reported by physicians.

Under other conditions, the propitious termination has taken place in a similar manner,—that is to say by the elimination of the contents of the cyst of the liver through the bronchial tubes—although the tumour after perforating the diaphragm had burst into the pleura.

Nevertheless, Gentlemen, rupture of cysts of the liver into the pleural cavity generally gives rise to extremely acute pleurisy, with a great amount of effusion, which declares itself by violent pain in the side, and intense fever soon leading to hydro-pneumothorax and death.

When matters advance less rapidly, a communication may be established between the cyst and the pleura on the one hand, and between the pleura and the bronchial tubes on the other; and then we encounter all the signs of hydro-pneumothorax, as in a case which has just come under my observation.

In a word, hydatid cysts of the convex surface of the liver may fill the thorax, and simulate pleuritic effusions: they may open directly into the lung, and may then eliminate their contents through the bronchial tubes: in these cases, the patients frequently recover. The cysts may open into the pleura, and give rise to a rapidly fatal pleurisy; or finally, they may open simultaneously into the pleura, and through the lung into the bronchial tubes, in which case recovery may take place, though generally the issue is fatal.

Already, in one of my lectures on the clinical study of hydatids of the lung, I have had occasion to speak to you of the manner in which hydatid cysts of the liver terminate by opening into the thoracic cavity, and into the lungs.[1] I had previously related to you a case which occurred in the hospital practice of my colleague Dr. Empis.[2] To that case, and to those other cases reported by different authors to which I have referred[3] you, I would to-day add one which occurred

[1] Lecture XXXIV: Volume III, p. 303.
[2] Lecture XXXII: Volume III, p. 215.
[3] Lecture XXXVI: Volume III, p. 338.

under your own observation, and which you had an opportunity of attentively studying in our Saint-Bernard's ward.

The case, interesting in every point of view, is peculiar from presenting an example of a hydatic cyst of the liver opening successively into the biliary passages below the diaphragm and into the pleura. Believing that the description of the case would lose much of its interest by being curtailed, I ask your permission to read its complete history as drawn up by my *chef de clinique*, Dr. Michel Peter.

"R. (Amélie), aged 27, was admitted to Dr. Trousseau's wards on the 11th September, 1863. She stated that three weeks ago she had experienced for two days acute pains in the epigastrium, and right hypogastrium, and that consequent upon these pains, jaundice appeared. From that date, the colour of the skin became deeper and deeper. From that date, likewise, the pains recurred periodically in paroxysms, once in two days: the paroxysms came on in the evening, and were of about two hours' duration.

"From the time when these attacks showed themselves, the patient suffered from anorexia, dyspepsia, and pains at the epigastrium soon after eating or drinking. She had not had vomiting till within the last three days. In addition to the intense pains which recurred in paroxysms, there was also a constant but quite bearable pain.

"Three or four years ago, after a violent attack of epigastric pains similar to those by which she was seized three weeks ago, and which continued for twelve hours, jaundice set in, and continued for nearly three weeks.

"On admission to the hospital, the patient presented an exceedingly deep yellow colour. She was thin: her face indicated suffering: and her general health appeared to be very bad. There was no heat of skin, and the pulse was but little quicker than natural.

"The *diagnosis* was:—*Hepatic colic with great consecutive congestion of the liver.*

"During the evening, the patient had severe and prolonged rigors, accompanied by increased pain in the hypochondrium and epigastrium. The fever continued during the whole night; and on the 12th September, the patient was in a burning fever: the skin was dry, the face flushed, and the pulse 152 in the minute. The hepatic region was the seat of acute pain. On percussion, it was found that the liver was twice its natural size. The patient vomited everything she took. During the evening she had profuse epistaxis.

"*Diagnosis :—Hepatitis.*

"Six leeches were applied to the anus, which produced a pretty abundant flow of blood, and afforded marked relief. This relief continued to be felt for three days. There was no diminution, however, in the volume of the liver, which descended almost to the umbilicus, and invaded the entire epigastrium. The fever returned with redoubled severity every evening.

"During the evening of the 14th, the patient was seized with exceedingly severe pain at the base of the right lung. This pain, which embarrassed respiration, extended to the right shoulder. Delirium soon set in, and continued all the evening.

"At the visit on the morning of the 15th, pain in the hypochondrium, irradiating to the shoulder and to the whole of the corresponding thoracic parietes, continued with the same intensity. On auscultation of the chest, however, no morbid signs were discovered. A bath afforded some relief.

"On the 16th, the jaundice presented a saffron yellow colour. The state of the patient was most distressing: she groaned continually: there was a continuance of considerable pain, which prevented examination by percussion. Respiration was imperfect and anxious: there was no egophony. The patient was ordered to take five milligrammes of calomel every hour.

"*Diagnosis :—Diaphragmatic pleurisy, the inflammation having been propagated from the convex surface of the liver to the pleura.*

"On the 17th, the pain was much less acute. There were heard for the first time a bellows-sound and egophony in the middle third of the dorsal region. There was dulness in the whole of the inferior third, and skodaic resonance anteriorly in the upper third of the chest.

"On the 18th, the pulse was 132, and small. The general condition of the patient was alarming. Dulness had invaded the whole of the right side of the chest posteriorly, and even occupied the infra-spinous fossa: anteriorly, the dulness ascended as high as the fourth rib. There was no respiration in the lower half of the chest: in the upper half, and in the neighbourhood of the vertebral column, a muffled bellows-sound and egophony were heard, which were most intense in the supra-spinous and infra-spinous fossæ. The dulness in the hepatic region continued as formerly; but the pain on percussion had almost entirely disappeared.

"Respiration was excited, without, however, being too frequent. The nose was pinched, the countenance very much changed, and the cheeks cyanosed.

"Next day, the 19th, there was complete dulness posteriorly from the top to the bottom of the chest. It was only in the subclavicular region that there was sufficient resonance, but the resonance was skodaic. A bellows-sound and egophony were heard posteriorly in the infra-spinous fossa and vertebral hollow. Dr. Trousseau demonstrated to those present that there was distinct fluctuation in the intercostal spaces. This fluctuation was produced by percussing the plessimeter with the hammer.

"The excessive profusion of the effusion, quite as much as the patient's difficulty of breathing, caused Dr. Trousseau to resolve to have recourse to paracentesis of the chest. The operation was immediately performed by Dr. Peter, the *chef de clinique*. It presented exciting incidents, and for that reason deserves to be described in detail.

"Having incised the skin over the fifth intercostal space in the axillary line, the operator introduced the trocar with a quick thrust. Upon withdrawing the trocar nothing issued from the canula; but on introducing through the canula a blunt probe, some drops of very fœtid pus immediately flowed out.

"Dr. Trousseau seeing that there was an impediment to the free flow of the fluid from the chest, substituted for the ordinary canula, one of a much larger calibre. Some spoonfuls of pus then escaped, when the flow stopped: the re-introduction of the blunt probe allowed the exit of a gelatinous substance recognised as a shrunken hydatid. Dr. Trousseau at once concluded that there was *perforation of the diaphragm from rupture of a hydatid cyst of the liver*, with consecutive purulent pleurisy. Nevertheless, to evacuate the fluid from the chest, and relieve the patient, Dr. Trousseau, having adapted a double syringe to the canula, removed rather more than half a litre of pus. The hydatids were constantly choking the canula so rendering the operation difficult, and at last making it necessary to discontinue before the chest was completely evacuated.

"Having removed the canula, and applied a piece of diachylon plaster to the wound, the patient was left. During the day, delirium supervened, the difficulty of breathing increased, and, in twenty-four hours after the operation, the patient died.

"*Autopsy*.—There was an enormous increase in the volume of the

liver: and its left was at least twice as large as its right lobe. At the posterior and upper edge of the right lobe, and projecting from the thoracic, and not from the abdominal parietes, there was a cyst sufficiently large to contain the fist of an adult. Its diaphragmatic peritoneal surface was circumscribed by numerous false membranes which were thick and evidently of very old standing. The cyst was covered by false membrane, which in some places was fibrous, in others atheromatous, and encrusted nearly everywhere by calcareous deposit. It was filled by pus, in which floated shrivelled hydatids. Three perforations were visible:

"One of these perforations opened below the diaphragm, the result of which was the formation of a cavity between the convex surface of the liver and inferior surface of the diaphragm, circumscribed at its periphery by adhesions between the liver and diaphragm.

"The second perforation, the orifice of which might be sufficient to admit the index finger, communicated with the hepatic duct, by which it opened into the choledoch duct, which was very much dilated and contained three small shrivelled hydatids exactly moulded to the shape of the passage they obliterated.

"The third perforation opened into the cavity of the pleura, through a perforation of the diaphragm: it had an inferior orifice sufficient to admit the little finger, and a superior orifice in the form of an elongated slit.

"In the left lobe, were four abscesses, the largest of which was the size of a walnut. They contained a semi-concrete purulent looking matter, which was found, on being examined by the microscope, to consist of pus-globules and fibrinous granules.

"The hydatids contained in the choledoch duct were situated at the junction of the hepatic and cystic ducts, which caused great dilatation of the latter. The gall-bladder, more than three times its normal size, contained a biliary fluid, oleaginous in consistence and of a very deep green colour. It did not contain any hydatids.

"In the pleural cavity, were nearly two litres of purulent fluid, containing hydatids in all respects similar to those removed by the paracentesis. The trocar had evidently penetrated into the pleura, and not into the cyst: the distance between the cyst and the wound made in the surgical operation showed that it would have been physically impossible to have reached the hepatic cyst by the trocar. Moreover, the diaphragmatic surface of the pleura and base of the

lung were covered by thick downy false membranes formed of superimposed layers, which were easily torn, and were evidently of recent formation. They covered nearly the entire lung, as high up as the infra-spinous fossa, gradually diminishing in thickness.

"The spleen was very large, and did not contain any hydatids.

"Nothing noteworthy was observed in the other organs."

Dr. Peter follows the narrative of this case with some remarks which I wish to bring under your notice; and in which I entirely concur.

"It is evident," he says, "that this patient had had three years previously a first attack of hepatic colic, and that even at the commencement of that illness which terminated in death, she was suffering from attacks of undoubted hepatic colic: it is not less evident that the attacks of colic had been produced by the successive passage of hydatids through the biliary ducts. The communication between the cyst and the biliary passages produced in the first instance attacks of hepatic colic; which, though not very unusual, are far from being of frequent occurrence. These, however, were not the only consequences.

"1. From the cyst communicating with the hepatic duct, and through it with the choledoch duct, it followed, that the cyst communicated indirectly with the small intestine: the result was the enabling the hydatids to make a passage for themselves through the intestine, thus allowing the cyst to be evacuated and the patient to be ultimately cured.[1]

"2. From the biliary ducts being in permanent communication with the cyst, two results ensued, one relating to the hydatids, and another to the cyst in which they were contained. The hydatids were killed, as often happens.[2] The other result was inflammation and suppuration of the walls of the cyst, which thus became a large depositary of pus. It was in consequence of this inflammation, a partial peritonitis—slow and obscure, but nevertheless continued, and dating back apparently to the first manifestation of the symptoms—that adhesions were formed between the convex surface of the liver

[1] Frerichs thus mentions the fact:—"Symptoms were observed similar to those which accompany the passage of biliary calculi through the choledoch duct." [See p. 593 of the second edition of the French translation of his treatise on 'Diseases of the Liver:' Paris, 1866.]

[2] Frerichs admits that a cure may take place in this manner:—See his Treatise on 'Diseases of the Liver:' *op. cit.*, p. 581.

and the diaphragm: it is also as a consequence of this same inflammation that the cyst successively burst:—1st, below the diaphragm, the purulent fluid being prevented from getting into the peritoneum by the adhesions between the diaphragm and the convex surface of the liver: 2nd, through the diaphragm into the pleura, from successive perforation of the walls of the cyst, of the diaphragmatic peritoneum, of the diaphragm itself, and ultimately of the diaphragmatic pleura.[1]

"In this way, during the life of the hydatids, the cyst in the first instance opened into the biliary passages from their growth, and the necessity for a larger habitation consequent upon their increased size: afterwards, it opened below the diaphragm, and at a still later period, into the pleura, by ulcerative inflammation caused by the introduction of bile into its interior.

"That was not all. As a consequence of the communication between the hydatid cyst and the intestine, the intestinal gases were enabled to penetrate into the interior of the cyst, which explained the fœtor, almost stercoraceous, of the fluid which issued from the puncture in the chest. By the existence of this fœtor, Dr. Trousseau was at once informed that he had to do with a hepatic cyst which had burst into the pleural cavity. It might have been added, as Dr. Trousseau remarked at a later date, that the cyst was in communication with the intestine. This, as was pointed out by Dr. Trousseau, is an almost pathognomonic sign, upon which, for the future, great stress must be laid.

"It has been established by the observations of Velpeau, that the contents of all the purulent collections in the neighbourhood of the digestive canal acquire a stercoraceous odour. There is a still stronger reason for this odour existing, when the cyst communicates with the digestive canal by an abnormal passage permanently established.

"It is worthy of notice, that in spite of the permanent character of the hepatic lesion, the patient had *periodically evening attacks*, and, at last, epistaxis—symptoms, all of which have been pointed out by Dr. Monneret as occurring in diseases of the liver."

Gentlemen, I have now sketched for your information the great outlines of the history of hydatid cysts of the liver: I have described

[1] DAVAINE:—'Traité des Entozoaires,' p. 478: DAVAINE offers no opinion on the subject. CRUVEILHIER and G. BUDD are of opinion that the introduction of bile into the cyst is the cause of its becoming inflamed.

to you the symptoms by which their presence may be recognised, and the consequences they may entail: I have stated to you the difficulties which frequently arise in the diagnosis, in respect of which, in many cases, it is impossible to attain absolute certainty except by making an exploratory puncture, and so giving issue to a fluid having special characteristics, or better still, by containing hydatids or débris of hydatids. I now come to discuss the question of most importance to physicians :—What is the best *treatment* of hydatids of the liver?

Though admitted that medico-therapeutic means are indicated in the treatment of the complications which may arise; though granted that narcotic applications, cataplasms, ointments containing opium and belladonna, applied to the affected parts may subdue the violence of the pain and the inflammatory symptoms, medicine is absolutely impotent to cure or even to stay the progress of the affection. Surgery alone can afford useful succour.

I have described to you the progress of the affection, showing how it increases in gravity from day to day, till the tumour becomes so large as at last to burst. Sometimes, the rupture takes place through the skin, and sometimes into the intestinal canal or bronchial tubes; and in these cases, there is a spontaneous cure: unfortunately, cures of this description are too exceptional to be counted upon. In hydatid cysts of the liver, the physician ought always to give a serious prognosis; and be prepared to employ active surgical intervention, though well aware that his intervention will unfortunately cause formidable dangers, and may even lead to a fatal issue at an earlier date than if the case had been left to nature. He, nevertheless, feels compelled to act, because his intervention, however numerous the unfavourable chances may be, affords greater probabilities of radical cure than could be expected from the unaided efforts of nature.

The object of the physician, therefore, is to evacuate the cyst; to adopt measures for the prevention of its again forming; to endeavour, consequently, to destroy the hydatids, which, by their increase in bulk and number, produce the tumour. When once the hydatids are destroyed, the pouch which contained them collapses, and finally disappears.

Several *modes of treatment* suggest themselves for the accomplishment of this object. In the first place there is *simple puncture*.

This puncture is recommended to be made at the most projecting

point of the tumour. As a general rule, however, it is preferable to operate in the hypochondriac region. The operation will be more easily performed in that region, as the abdominal walls which the instrument has to traverse are very thin. There will, moreover, be fewer dangers to dread, as the peritoneum alone will be involved, whereas, if we take as our only guide the precept to operate on the most prominent part of the tumour, we may run the risk of wounding several very important organs. Here, let me explain. In our patient of Saint-Agnes's ward, the hydatid cyst projected from an intercostal space. Now, in some cases of this description, the trocar would have to traverse the skin, parietal pleura, diaphragm, and peritoneum. There would then be a danger of pleurisy and peritonitis as concurrent consequences of the operation.

An *exploratory puncture* is made with a very small trocar. Without the employment of any other means, it may lead to a definitive cure; but it may likewise be the starting-point of fatal complications. This occurrence is quite exceptional; but still, it has occurred: after an exploratory puncture, peritonitis has supervened, and carried off the patient in a few hours. Dr. Moissenet, my colleague at the Hôpital Lariboisière has related a case of this kind which you will do well to remember.[1] Let me recommend you to protect yourselves by a statement of possible untoward eventualities, whenever you have occasion to make an exploratory puncture in this class of cases: while you reassure the relatives of the patient as to the general harmlessness of the operation, also warn them as to the untoward accidents which may sometimes occur.

Dr. Boinet[2] has formulated certain rules, by following which it would always be possible to avoid introducing any of the fluid into the abdominal cavity, a common cause of rapidly fatal peritonitis. He says that it is necessary to be careful, on withdrawing the canula from the trocar, to press back with the fingers the abdominal parietes towards the cyst, so as not to allow any free space to exist between them. This pressure ought to be continued for a minute or two after the operation, and the relative state of the parts should be

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[1] Moissenet:—Sur la Ponction avec le Trocar Capillaire, appliquée au traitement des Kystes Hydatiques du Foie. [*Archives Générales de Médecine*, for February, 1859.]

[2] Boinet: Traitement des Tumeurs Hydatiques du Foie par les Ponctions Capillaires et par les Ponctions suivies d'Injections Iodées. Paris: 1859.

maintained for some days by means of graduated compresses and a bandage applied round the body.

In the memoir by Dr. Moissenet to which I have just been alluding, the author proposes to apply puncture with the exploratory trocar to the radical treatment of hydatid cysts—a means which hitherto had only been used for diagnostic purposes. He quotes some published cases in which exploratory puncture had led to an ultimate cure; but no one prior to my honourable colleague of the Hôpital Lariboisière had thought of turning these facts to account in practice. This method of treatment will be applicable to those cases in which the cysts "have a manifest tendency to advance externally, and when they impede the free exercise of the organs in the midst of, or in the neighbourhood of which they are developed. Under these circumstances, and even in the absence of adhesions to the abdominal parietes, evacuant capillary puncture may be at once resorted to in cases of acephalous cysts, when there is no obstacle to complete evacuation of the cysts. But when from the extreme debility of the patient, and the enormous size of the tumour, it is evident that the contents can only be evacuated little by little, and at intervals, it is necessary to endeavour to produce firm adhesions between the cyst and the abdominal parietes, both for the purpose of performing the capillary puncture without danger to the peritoneum, and of being able afterwards to have recourse, under favourable circumstances, to such other means of treatment as may seem appropriate."

Experience has not given sufficiently decisive testimony in favour of this method of treatment; and I am unable to concur with Dr. Moissenet in believing that evacuant puncture with the trocar is less dangerous than exploratory puncture; for a larger proportion of cases can be adduced in which the exploratory operation was performed without any bad result, as a set-off to the other cases in which its issue was unfortunate.

No one denies the dangerous consequences which may result from making the evacuant puncture with a trocar the canula of which is sufficiently large to allow the passage of fluid, of small hydatids, and débris of hydatids. The *simple incision* is an operation which is always applicable when the tumour projects outwardly in such a way as to threaten to open; for then there is reason to hope that adhesions have become established between the tumour and the walls of the abdomen. Should such adhesions not exist, it will neces-

sarily happen that the fluids contained in the cyst will escape into the peritoneal cavity, if the opening has been made through the abdomen, and into the pleural cavity, if the puncture has been made through the chest: rapidly fatal inflammations are almost inevitably the consequences of the effusions which thus take place.

To avert so formidable a complication, Jobert (de Lamballe) has proposed that several punctures should be made in succession, so as gradually to reduce the size of the tumour, giving the cyst time to contract; or better still, after making the puncture, to leave the canula in its place for twenty-four hours. The canula, which traverses the abdominal parietes and the cyst, determines, at its points of contact, an inflammatory action, which tends to establish adhesions between the parietal and cystic folds of peritoneum. In reality, Jobert, by this proceeding, obtains results similar to those obtained by the plan of Bégin, the plan of Récamier, and by my own method.

Bégin's proceeding, which I have already explained to you in my lectures on hepatic colic, consists in reaching the tumour by successive incisions.[1] In the commencement of the first stage of the operation, the skin and muscles are alone implicated; then the aponeurosis being reached, is opened with extreme caution: after which, the peritoneum itself is incised. The cyst is then seen at the bottom of the wound. A dressing is applied, which is kept in place by means of a very tight bandage, and the patient is told to move about as little as possible. When inflammation of the parts has produced adhesions between the cyst and the abdominal parietes, the second stage of the operation is proceeded with: this consists in penetrating the tumour with a large trocar, or (which is preferable) with a bistoury.

Upon the same occasion, I spoke to you of Récamier's method. It is not so quickly performed as Bégin's operation, but what it lacks in rapidity of execution, it gains in safety. In the first stage of the operation, caustic is substituted for a cutting instrument. To the skin of the place where the cyst is to be opened, there is applied potassa fusa, Vienna paste, or the caustic of Filhos, in sufficient quantity to produce an eschar of a certain size, involving at least the thickness of the skin. When this eschar is formed, it is

[1] Begin:—Mémoire sur l'Ouverture des Collections Purulentes et autres, développées dans l'Abdomen. Paris: 1830.

detached, and a new supply of caustic is applied to the bottom of the wound. Proceeding in this way, by successive cauterizations, we at last reach the peritoneum, which we must be careful to respect. Inflammation takes possession of the serous membrane; and by keeping the parts tightly bandaged, we bring the tumour into contact with the abdominal walls in such a way that adhesions are formed between the peritoneal fold covering the cyst, and the peritoneum covering the abdominal walls, in consequence of the former participating in the inflammation of the latter; just as takes place when the plan is followed of leaving the canula in the puncture, or when the other method of successive adhesions is adopted. Thus, there is a possibility of opening and emptying the cyst, without being afraid of causing it to contract upon itself in such a way as to pour its fluid contents into the cavity of the peritoneum.

Récamier's method has been objected to, on the ground that there is often a difficulty in limiting the action of caustics: it has been said that they may give rise to more or less extensive, and even to general peritonitis; while also, an objection of an opposite character has been adduced, to the effect, that the desired result, the production of adhesions, sometimes does not occur. To the latter objection, it may be replied, that in those cases in which adhesions are not produced, the caustic has been badly applied, and has not reached the peritoneum; or that sufficient care has not been taken to maintain the abdominal walls in apposition with the tumour by means of suitably applied pressure.

Multiplied acupuncture is another method by which you have seen me endeavour to obtain adhesions between the cyst and the abdominal walls. I have already told you my manner of employing this method: acupuncture when practised in this way seems to me to present the advantage of being always accompanied by an inflammation which is circumscribed within the limits of its origin: and another advantage consists in the adhesions being more rapidly obtained, because there exists no necessity, as when Récamier's method is employed, of successively destroying the different layers of the skin before reaching the peritoneum.

When a hydatid cyst has been opened, the suppuration which takes place within it from decomposition of its contents, may become, in some cases, the starting point of a putrid or purulent infection leading to a fatal issue. To prevent such results, it has been proposed to inject water, or some other fluid, such as alcohol,

or tincture of iodine, into the cavity of the opened pouch, with a view to modify the condition of the suppurating surface.

Iodinous injections, used for the first time in the treatment of hydatid cysts of the liver by Dr. Boinet, are those which up to the present date have yielded the best results. Beware, however, of supposing that they constitute an infallible system of treatment. No doubt, a somewhat imposing number of cures has been recorded as resulting from the use of iodinous injections; but still, it must be admitted, that the method is very hazardous even when skilfully employed.

The injections ought to be employed daily: the mixture should consist of equal parts—say fifty grammes—of tincture of iodine and distilled water, with an addition of a certain quantity—say four grammes, of the iodide of potassium. Should symptoms of iodism show themselves, the proportion of distilled water must be increased.

When the walls of the pouch are thin, they contract on themselves, and the cavity is at last closed: but it does not so happen when the walls are thick.

I shall only say a few words regarding *injections of bile*, a mode of treatment recently proposed, and used for the first time, in 1857, by Dr. Auguste Voisin. Before any opinion can be definitively pronounced upon this method of treatment, it will be necessary to have reports of a greater number of cases than has hitherto been recorded. Besides, while it is easy to understand how it is that the infection of iodine is useful, it is not so easy to form a conception of the benefits resulting from the injection of bile, particularly when we bear in mind the terrible consequences of the contact of bile with the peritoneum and subcutaneous cellular tissue.

LECTURE LXXX.

MALIGNANT JAUNDICE.[1]

Malignant Jaundice [Ictère Grave] is a general disease—totius substantiæ—analogous to Typhoid Fever, and the Bilious Fever of Tropical Climates.—Retention of Bile in the biliary ducts does not constitute Malignant Jaundice.—Typhoid Symptoms at the beginning of the attack.—Yellow colour, and Green colour of Skin and Conjunctivæ.—Hemorrhages from the mucous membranes: Epistaxis, Gastrorrhagia, Melœna.—Hemorrhages from the Skin: Ecchymosis, Purpura.—Decrease in size of Liver not constant.—Secondary Nervous Symptoms.—Death the most common termination.—Morbid Anatomy: Change in Structure of Liver not constant.—Primary Alteration of Blood.—Notice of the Fatal Jaundice of Infants.—Malignant Jaundice is not Yellow Fever.

Gentlemen:—In a recent lecture on hepatic colic, I gave you the complete details of the case of a woman, aged fifty, who died in Saint-Bernard's ward under complications originating in strangulated hernia. You no doubt recollect, Gentlemen, that this patient (who was in our wards at several different times for hepatic colic), had a very severe attack of jaundice during the latter weeks of her sojourn in hospital. The biliary ducts must have been obstructed during several weeks at each attack of hepatic colic, for the jaundice was long continued, and the urine had a decided mahogany colour, while the fæces presented the characteristic appearances met with under similar circumstances.

This patient died, as I have said, from strangulated hernia; but the posthumous examination, made with very great care by Dr.

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[1] Ictère Grave: Ictère Malin: Ictère Typhoïde.

Benjamin Ball, disclosed among other interesting facts, that there was complete obliteration of the excretory bile ducts. The cystic duct and the first portion of the choledoch duct were so blended together, amid the surrounding products of inflammation, that it was impossible to conceive the bile flowing into the intestine by the normal passage. It was evident, that if the bile reached the duodenum, its flow must have been through a fistula, of which we could only find the intestinal opening. I do not propose to enter at greater length into the details of this autopsy, which are still fresh in your recollection: my principal object at present is to call your attention to the fact that when during many weeks, and even during many months, there existed a relative if not an absolute retention of bile, the liver presented no morbid structural alteration, the bile certainly continued to be secreted, but, being retained in the excretory ducts, was to a great extent reabsorbed, as was indicated by the gravity and persistency of the jaundice.

It results from the examination of this case, as well as from data founded on many other cases of an analogous character, that the retention of bile does not *necessarily* lead to special poisoning of the economy. Moreover, even the persistent retention of bile does not inevitably produce an organic change in the liver. It is, therefore, impossible to attribute the symptoms of the disease termed "*ictère grave*," "*ictère malin*," "*ictère typhoïde*," to retention of bile.

For at least the last ten years, in England, Germany, and France, the attention of pathologists has been specially directed to a malignant form of jaundice, which almost invariably terminates rapidly in death—a disease evidently general in its nature, existing either with or without structural change of the liver, and having jaundice and numerous hemorrhages as its principal symptoms.

Here is a case in point:—A woman, thirty-four years of age, a patient who occupied bed 24 of Saint-Bernard's ward, had been complaining for seven weeks of pains throughout the body, but particularly in the joints: she had, nevertheless, continued her employment as a journey-woman, but four days before coming into hospital had experienced general discomfort, and remarked that a little blood was mingled with the sputa and nasal mucus. There was a continuance of pain in the continuity of the lower limbs, and particularly in the right haunch and knee; but there were no other signs of rheumatic arthritis. The patient was feverish, and had a small

quick pulse. The tongue was foul, though there was no loss of appetite: there had been neither vomiting nor diarrhœa; and the abdomen was soft and sluggish. The liver extended several finger-breadths beyond the false ribs. There was complete sleeplessness. The skin presented a slightly yellow tinge: the urine had a red mahogany colour, and became decidedly green on the addition of nitric acid or tincture of iodine.

Next day, the patient complained of suffocative sensations coming on at intervals: examination of the heart and lungs did not furnish any explanation of this intermittent dyspnœa. The articulations were still painful: the fever was high: the skin was moist: and the pulse was 120. The mental condition remained quite clear; but on the following night, delirium supervened, and the pulse became more rapid. The jaundice was a little more decided: the sputa again became sanguinolent: though there had been neither epistaxis nor vomiting, the pulse was becoming smaller and smaller: the delirium continued, and the patient sunk on the fourth day after her admission to the hospital, that is to say, on the seventh day from the commencement of the hemorrhages, and the more decided feelings of general discomfort which obliged her to seek for hospital succour.

The autopsy showed that there was no articular lesion—no pus in the joints—not even a bright injected appearance, nor an abundant secretion of synovia in the articulations which had been painful. In no part of the organism could any evidence be found of either purulent collections or phlebitis. The stomach and intestines presented no morbid changes: Peyer's patches had their normal appearance: there were no ulcerations in the large intestine. The lungs were slightly congested at their base, and there were no traces of pneumonia or of hemorrhage. The heart was small: its valves were normal: and there was neither endocarditis nor pericarditis. The brain itself presented no change.

There was no enlargement of the liver; but it was flabby, and of a brownish yellow tint. When cut, the section presented a deeper colour: every trace of the lobular structure of the liver had disappeared. The usual granitic appearance of healthy liver could not be seen. The gall-bladder was contracted and scarcely contained any bile.

A microscopic examination was made by Dr. Benjamin Ball at that time *chef de clinique*. He found that the liver presented the following morbid changes:—

1. Capillary vessels few in number, and diminished in calibre.

2. Complete disappearance of the normal cells of the parenchyma of the liver: there was no trace even of their débris. In their place were found brown granules of pigmentary matter, some very small, others pretty large and of a polyhedral form: there was a very great abundance of minute fat globules, which rapidly disappeared on the addition of a small quantity of ether: at some points, extravasated blood-globules were seen.

Hyperplasia of the cellular tissue presented itself in bands distinctly visible upon examining a thin slice of the tissue.

Clusters of isolated cellules were seen here and there, which were turgid and infiltrated with fat; but nowhere were there any tyrosis or leucocythæmic globules.

The leading symptoms in this case were a long-continued state of feverishness, which was soon accompanied by feelings of general discomfort, an icteric tint of skin, and slight hemorrhages from the mucous membrane of the nose and bronchial tubes. The patient complained of dyspnœa, which was not accounted for by any lesion of heart or lungs: cerebral symptoms supervened: there existed delirium and excitement. Seven days after the appearance of the hemorrhages and jaundice, the patient died in a comatose state. The muscular and articular pains could not be attributed to the rheumatic diathesis, because the patient had had no sign, present or past, of that diathesis, so that they might be ascribed, as well as the other morbid symptoms, to a general disease similar in its character to the pyrexiæ. The appearance of hemorrhage and yellow skin, speedily followed by formidable nervous symptoms gave ground for diagnosing typhoid jaundice, that is to say, a pyrexial malady with a probable organic change in the structure of the liver. The autopsy has verified this diagnosis: but it must be remarked, that in this case there was no *atrophy of the liver*, although the cellules were entirely destroyed. We could not discover any probable cause of the disease.

Here is another case:—

A. G., aged forty-six, was of frail health, nervous, hypochondriacal, and timid. He had had frequently slight disturbance of the digestive functions, but nothing to require active medical intervention. In the beginning of July, 1864, without known causes, he had a paroxysm of fever, which subsided about the fifth day, and then, when all was going on well, jaundice, unaccompanied by fever

declared itself. Up to that date, nothing had occurred to alarm either the patient or his family; but two days later, there was a new attack of fever, and a phlegmon appeared under the jaw-bone on the left side.

The yellowness became very intense: the skin was hot: the pulse ranged between 120 and 130: the tongue became parched, and slight attacks of epistaxis supervened. There was no pain in the region of the liver. The mind was clear. The patient was unable to sleep.

The intensity of the fever, and the acuteness of the pain caused by the phlegmon made the diagnosis difficult. Was the fever excited by the phlegmon, or was its chief cause the hepatic affection? The answer to this twofold question materially influenced the prognosis. In general, when jaundice is accompanied by fever, there is great danger in the case: but this is no longer exactly so when the fever can be ascribed to a concomitant disease, although experience shows that jaundice, even of the simplest kind, is often aggravated by the mere existence of fever, whatever may be the cause of that fever. Therefore although we hoped that matters might assume a more favourable aspect, we could not fail to be exceedingly anxious as to the issue.

The hepatic lesion, however, did not give rise to pain: there were no anxious nervous symptoms: the phlegmon advanced satisfactorily; and although the attacks of epistaxis continued to occur, although the icteric tint of the skin remained as deep as ever, it was justifiable to entertain the pleasing hope that all might still proceed to a favourable termination.

As a rule, the fever due to a phlegmon diminishes, when the phlegmon becomes an abscess. Pus accumulated, fluctuation was felt under the skin, the abscess began to open into the mouth; and yet the fever did not moderate. We were now at the tenth day from the first appearance of the jaundice. One morning, subsultus tendinum was observed, the tongue became more parched, and there was more constitutional excitement: the succeeding night was more agitated: next morning, the subsultus was more violent. In proportion as the nervous symptoms increased in severity, our anxiety as to the issue also increased. During the evening, the patient became weak, and expired in the night without having had delirium or convulsive movements.

This case, Gentlemen, places before you the difficulties of

the diagnosis when jaundice is complicated with an intercurrent affection.

Dr. Jules Worms lately communicated to me the following case:—

A soldier of the 14th regiment of the *voltigeurs de la garde*, twenty-nine years of age, squat, strong, and very healthy, a man said not to have been of intemperate habits, one day when on guard complained of loss of appetite and uncomfortable sensations. Next day, for the benefit of his health, he took a walk with his comrades. On the third day, he felt more unwell, had rigor accompanied by prostration of strength, and was unable to leave his bed. He complained of pains in his limbs; and his comrades observed that he was jaundiced. On the fourth day, the prostration was at its height: bilious vomiting having supervened, he was sent to the Hôpital du Gros Caillou. The admitting physician observed that there was jaundice of medium intensity, and coldness of the skin. The pulse was slow, and hardly appreciable: the physical prostration and loss of mental power were extreme. During the morning of the fifth day of the attack, the patient died, having been in a state of torpor from the previous evening, without having had any evacuation from the stomach or intestines, or any hemorrhage.

The autopsy was made twelve hours after death. The icteric colour of the skin was not very intense; but in both eyes, the sclerotic was as yellow as ochre. The body showed no traces of ecchymosis: the gums, however, were covered with a sanguineous crust. Both lungs were congested at the base. The right side of the heart was filled with clotted blood, part of which was hardly coagulated. The small clots were gelatiniform. The left side of the heart contained some fluid, grumous blood. There were no coagula in the vessels. The spleen was fourteen centimeters in length, and ten in breadth; it was very soft and friable.

The stomach contained two hundred and fifty grammes of a fluid as black as ink, from which a black matter was deposited, which, on examination by the aid of the microscope, was found to consist wholly of altered blood-globules. Numerous very small ecchymotic patches were disseminated over the surface of the great curvature of the stomach: the mucous membrane was softened. The kidneys did not present any change of structure apparent or histological. The walls of the bladder were normal.

The inferior margin of the liver was found to be three finger-

breadths above the costal margin. The liver was of a deep red colour: it was very small, being not larger than the liver of a child. Its transverse diameter was not more than twenty-four centimeters: the perpendicular diameter from the gall-bladder to the point of emergence of the vena cava was fifteen centimeters. The weight of the organ was only nine hundred and forty grammes, the average weight of an adult's liver being fourteen hundred grammes. The gall-bladder contained sixty grammes of very black, thick bile. The capsule of Glisson was in folds, and thickened at certain points, forming an arborescent appearance. The capsule was evidently too large as a covering for the shrunken liver. The hepatic tissue was very soft and friable. The different sections of the liver presented to the naked eye no striking difference from the usual appearances. Yellow points no doubt were visible; but this appearance fell very far short of that marquetry which is characteristic of cirrhosis.

The condition revealed by microscopic examination was as follows. The hepatic cellules were entirely destroyed. It was only here and there that shreds of the cellular envelopes were to be seen. There was a profusion of pigmentary cells. There were also found some nuclei of free cellules, which were beginning to undergo the fatty transformation: but there were scarcely any fat-globules.

The striking features in this case, Gentlemen, were the abrupt onset and rapid progress of the disease, and subsequently, the nervous symptoms which proclaimed the existence of a serious organic change. This man's health was remarkably good, when, all at once, he complained of general discomfort and loss of appetite: next day, he had rigors announcing the general affection of the system, and immediately afterwards, he fell into a state of prostration which continued till he died. It was scarcely during more than a few hours before his death that he had a little transient delirium, which soon subsided into a state of torpor. The appearance of the jaundice from the second day of his illness proved that the cause was in the liver; and the typhoid condition of the patient gave certainty to the diagnosis. Although he had had neither nasal, stomachal, nor intestinal hemorrhage, the stomach contained two hundred and fifty grammes of black blood, showing that hemorrhage had preceded death. The blood, moreover, was altered, and the heart contained viscous, diffluent blood: the spleen was soft, and friable: and the liver presented all the anatomical characters of *diffuse hepatitis*, or the *acute yellow atrophy* of German authors.

These are cases, Gentlemen, which Graves and Budd would have described under the name of *malignant jaundice* or *Irish yellow fever;* and which Frerichs introduced into his chapter on *acute atrophy*, or *yellow atrophy* of the liver.[1] Finally, these cases are similar to those described by my learned colleague Professor Monneret under the name of *essential hemorrhagic jaundice.*

What then are the characteristics of this formidable disease, so variously explained, and the subject of so many theories, though regarded as essentially a *general disease* by the majority of authors?

The icteric colour of the skin, in all its shades of intensity, can only be looked upon as a symptom. Jaundice is not a disease; but is on the contrary the expression of numerous states, some of which are compatible with health, whilst others are invariably mortal. But although jaundice is sometimes symptomatic of organic lesion of the liver, it happens occasionally that no structural change can be demonstrated at the autopsy, and that the most competent histological observers are unable to recognise any important modification in the hepatic cellules.

In general, jaundice is only a temporary phenomenon which does not at all disturb the gastro-intestinal functions, nor prevent those in whom it exists from pursuing their ordinary occupations. This is the case even when it arises from a mechanical obstacle to the passage of bile: whatever may be its duration or intensity, there exists no malady (using malady in its vulgar acceptation), though the patients sometimes suffer intense pains, which are generally caused by the difficult passage of biliary calculi through the hepatic ducts. And, Gentlemen, bear in mind the remark I made to you at the beginning of this lecture, to the effect, that jaundice may continue for several months without the economy showing any disturbance resulting from the unwonted circulation of bile in the blood. All the organs and all the fluids are coloured by the bile; and yet none of these organs or fluids cease to fulfil their physiological functions. Finally, there are pathological conditions in which the excretion of the bile is impossible, as, for example, when the choledoch duct is obliterated: there are cases in which there is an almost complete suppression of the biliary secretion, as in atrophy from cirrhosis; and yet the

[1] Frerichs: Traité des Maladies du Foie et des Vois Biliaires: traduit de l'Allemand par L. Duménil et J. Pellagot, 2me édition; 1866.

retention or non-secretion of bile does not, till after long continuance, determine secondary general morbid changes incompatible with life.

But although it be true, as a general proposition, that jaundice is only a symptom of inconsiderable gravity, clinical observation demonstrated to Franciscus Rubæus,[1] Morgagni,[2] Boerhaave, and Graves,[3] that though at first mild, and presenting apparently only the usual conditions, it might suddenly manifest general symptoms terminating in death. Indeed we all know how necessary it is to give a very reserved prognosis in cases of jaundice. As in cases of pleuritic effusion, so in jaundice, one can never say what is to be the termination. Graves states that he was always uneasy as to the issue when nervous symptoms showed themselves, symptoms moreover, which he remarked, were often coincident with a diminished secretion of urine, *the skin and sclerotic retaining their yellow tint:* he also states that, fearing the retention of bile in the system, he has often with success administered diuretics, endeavouring by that proceeding to imitate nature, which eliminates bile by the kidneys when there is an impediment to its exit through the intestinal canal. The Dublin Professor, however, has not described a specially malignant jaundice, and even in his lectures on the "yellow fever of Ireland," he only accords a secondary importance to the yellow colour of the skin.

I must, therefore, refer to observers of the last few years for a description of that special disease which all at once assumes a dangerous aspect, and is almost always mortal. It is only this special condition of disease which I wish to bring under your notice in this lecture, intentionally omitting to notice grave conditions and symptoms which complicate attacks of jaundice of variable duration, and indicative of the existence of biliary obstruction.

Among the many contemporary authors who have studied sudden *typhoid jaundice,* may particularly be mentioned Rokitansky, Henoch, Budd, Dusch, Griesinger and Frerichs.[4] But side by side with these English and German authors, it is only fair to cite some French

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[1] Rubæus (Franciscus):—De Ictero Lethali.

[2] Morgagni:—Anatomical Letters, 10 and 37.

[3] Graves:—Clinical Lectures.

[4] Frerichs:—Practical Treatise on the Diseases of the Liver and Biliary Passages, 2nd Edition, 1866, p. 164.

physicians who have specially based their works on clinical observation and general pathology. Let me particularly refer to the treatise of Dr. Monneret, in which the diagnosis and nature of the malady are studied with great sagacity, and in a manner which shows a profound acquaintance with all diseases in which the liver plays a part. Dr. Genouville, in his inaugural thesis, expressed concurrence in the views of Dr. Monneret. Finally, Dr. Blachez has expounded a theory of Gubler, and published interesting details regarding that species of malignant jaundice called *canis*.[1]

If you read the reports of cases of idiopathic malignant jaundice, or if you observe one well-marked case of that malady, it will be impossible for you not to be struck with its similarity to the symptoms presented in cases of the pyrexiæ. It may be remarked, in fact, that from the beginning of the attack, the whole organism is affected by the disease, as in dothinenteria, smallpox, bilious fevers of tropical climates, and the pernicious fevers of certain countries.

Suddenly, or after some days or weeks of feverish discomfort, the patients complain of general prostration: in vain, they struggle against this state, the malady augments in severity: exhausted in strength, they take to their beds, and soon afterwards, may be detected jaundice, often accompanied by frequent hemorrhages from the skin and mucous membranes.

When the progress of the disease is rapid, there occur, after the third or fourth day, various nervous accidents such as excitement, convulsions, delirium, and at last profound coma: in which state death takes place. It is important to remember, that in many cases there is a total absence of reaction, scarcely any quickening of the pulse, even a diminution in the temperature of the skin, and no tendency to a critical discharge from the intestines. When the malady continues for several days, repeated hemorrhages take place from the stomach and intestines, after which the vomit and stools consist almost entirely of altered blood. The vomit is black, and identical in composition and aspect with the matter ejected in hematemesis from cancer of the stomach. There is sometimes bile in the matter vomited; but that is only observed at the beginning of the attack. The urinary secretion, which is abundant, deposits altered blood-globules; and (according to Frerichs) *leucine* and *tyrocine* could also be detected in the deposit. The same observer

[1] Blachez (P.):—De l'Ictère Grave: thèse de concours pour l'agrégation: Paris, 1860.

has remarked, that in these cases the urine contains a very small quantity of *urea;* and pathological anatomy reveals structural changes in the kidneys similar to those which exist in the liver.

There may be a recurrence of the epistaxis; and the gums are frequently covered by black sordes, and exude blood from their free margins.

Jaundice may either be general, or limited to the upper half of the body, as in a case recently described by Dr. Hecker. The shade of yellow is more or less deep: and the jaundice may either be green or bright yellow, but these variations in colour are of no importance —of no more importance than the greenish brown sometimes observed in the conjunctivæ. Dr. Monneret, and other observers, have remarked, that the appearance of the countenance contrasts with the state of general prostration: the features, so far from presenting a hippocratic appearance, appear on the contrary quite expanded.

The two leading symptoms then are the hemorrhages and the yellow colour: when the patients are roused from their apathy to answer questions, they sometimes complain (as did our patient in Saint-Bernard's ward) of muscular and articular pains, which are probably nothing more than the febricula so common at the commencement of pyrexiæ and toxæmic diseases. They seldom complain of headache: sometimes, they have attacks of suffocation, sighing, and irregular respiration.

On examining the different organs, a variety of phenomena are generally observed, all of which are important. The jaundice solicits first of all an examination of the liver. According to Dr. Frerichs, in the majority of cases, there is pain at the pit of the stomach and in the right hypochondrium, as you see in our patient in Saint-Agnes's ward (whose history I shall forthwith relate to you). Palpation and percussion increase the pain; while at the same time, they generally, but not always, enable us to ascertain that there is considerable *diminution* in the volume of the organ. This assertion of Frerichs is all the more remarkable, that a great many cases occurred in women at the sixth, seventh, and eighth month of pregnancy, a stage of gestation at which we know that there is a notable augmentation in the size of the liver, irrespective altogether of any morbid condition. There is, however, nothing doubtful in the statement of Frerichs, for the majority of the patients died from the disease, and on posthumous examination of their bodies, the liver was

found to be atrophied.[1] But many of the cases of Budd,[2] Hanlon, and Monneret, as well as the anatomo-pathological history of our patients in Saint-Bernard's and Saint-Agnes's wards weaken the generalisation of the assertion of the Berlin professor. In these cases, the liver had retained its normal volume; while on the other hand, in the case related by Dr. J. Worms, it had lost nearly one third both in size and weight.

From all these facts, it may be concluded, that diminution in the volume of the liver has only a relative importance, inasmuch as it is a symptom which is wanting in numerous cases. But pain in the epigastric and hypogastric regions has a greater degree of importance, as it is almost always met with, and is the consequence of the morbid action which is progressing in the liver, and sometimes in the mucous coat of the stomach, so frequently the seat of profuse hemorrhage. It is surprising that observers have not more often noted the presence of pain in the spleen, pathological anatomy having demonstrated that that organ has often in this disease been the seat of organic changes, or at least of passive congestion as is observed in septicæmia.

Notwithstanding the existence of dyspnœa and irregular respiration, nothing morbid was discovered in the lungs or heart; and the autopsy confirmed the conclusions formerly established by clinical experience, viz., the general absence of lesions in these organs. In this way, we become reduced to the necessity of referring these functional disturbances to an affection of the splanchnic nervous system.

It is well, however, to bear in mind, that Hecker, following other observers, has explained the sluggishness of the circulation by the existence of fatty degeneration of the muscular fibres of the heart. As to bronchial or pulmonary hemorrhages, they are not the result of a special pathological change in the lungs, but of passive congestion of all the organs.

I have often compared malignant jaundice with the pyrexiæ: yet every pyrexia has as one of its chief elements acceleration of the pulse; while on the contrary, in many cases of malignant jaundice, there is only a slight elevation of the pulse, or sometimes even a fall

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[1] Frerichs:—Traité Pratique des Maladies du Foie: traduit de l'Allemand par les docteurs Louis Duménil et J. Pellagot, 2me édition. Paris, 1866.

[2] Budd:—On Diseases of the Liver. Third edition: London.

below the usual standard. I do not include in this remark the quickening of the pulse which occurs just before death, for that is a phenomenon which belongs to the last agony. The inconsiderable frequency of pulse in typhoid jaundice depends upon the general prostration of functional and organic life: the whole economy being prostrate, there is no febrile movement, because there is no tendency to reaction. The original change in the blood, and the disorganisation of the liver (when it exists), are of such a nature, that it is impossible for the reflex and sympathetic actions to be produced, on which depend acceleration of pulse, increase of temperature, and in lieu of them, we have sweating or copious diuresis. It appears that the action of the morbid principle, whatever its origin, whether in or external to, the individual, is such that it does not impart any power of reaction to the organism. But notwithstanding this absence of fever, properly so called, malignant jaundice is not the less appropriately grouped with the pyrexiæ, with typhoid fever, and with yellow fever, which are only special septicæmics, with or without special febrile reaction, according to the intensity of the cause, or the resistance of the individual patient.

Likewise, the hemorrhages are passive in typhoid jaundice, and similar in character to those observed in malignant smallpox and malignant scarlatina, the hemorrhage in these pyrexiæ being frequently one of the signs of their malignity.

Many authors believe that in malignant jaundice there are two stages: to one of them, belong jaundice, hemorrhages, and the almost total absence of febrile reaction: to the second stage, belong nervous symptoms, convulsions, delirium, and coma.

When we study the theories of these authors, we find that they regard the nervous symptoms as consequent upon secondary poisoning, or on biliary poisoning of a simple or complex kind. We shall afterwards discuss this interpretation, which I believe to be too absolute: at present, I only wish to remark that, if there exist a first stage, the epiphenomena constituting the second stage seem to me to be the consequences of the progress of the malady. I shall then briefly analyse the different nervous symptoms which supervene—sometimes, on the third or fourth day of the disease, and at other times, not till one or two weeks from the commencement of the jaundice and hemorrhages.

The delirium, though generally of a quiet character, may be accompanied by excitement, according to the habits or idiosyncrasy

of the patient: generally, it begins during the night, and continues with only slight intermissions: soon, as in all grave diseases, it is succeeded by coma. I have already said that the patients are seldom attacked by convulsions: general convulsions, when they do occur, have a tendency to assume the eclampsic form. Dr. Monneret observed a case in which they occurred only on one side, but in that case, at the autopsy, it was found, that there was hemorrhagic meningitis.

Death is the usual termination of malignant jaundice; but cases terminating in recovery have been observed by Hanlon and Griffin. In these cases, the nervous symptoms were mild, and of short duration. It is not stated whether any critical phenomena occurred in these cases. There are also other recorded cases which demonstrate the possibility of a propitious issue in this disease: Professor Monneret relates the case of a medical student whom he attended, who completely recovered from an attack of idiopathic hemorrhagic jaundice. Baudon relates a case of typhoid jaundice: he says that in this exceptional case, "there was inflammation and enormous enlargement of the parotid gland, which extended from the right temple to below the inferior maxilla. Probably, the parotitis was critical, for from the time of its appearance, there was marked amendment." Dr. Carville's memoir, just published, on an epidemic of malignant jaundice, observed by him in the summer of 1859, would seem to show that typhoid jaundice is a less formidable disease than has been supposed.[1] Of 47 patients who had idiopathic hemorrhagic jaundice, only 9 died. This was a very much less mortality than that hitherto met with in sporadic malignant jaundice. The mere announcement of this result is so entirely opposed to existing opinions in general pathology, that one is inclined to believe that some important data relating to the cases escaped observation.

Before treating of the nature of the disease, it is necessary to review the principal anatomical lesions of malignant jaundice. So great has been the part assigned in this disease to lesion of the liver, that it has been called "acute yellow atrophy of the liver," and "diffuse hepatitis."

The liver, in truth, is often the seat of a more or less generalised alteration of the hepatic cellules: according to Rokitansky and

[1] Carville: *Archives Générales de Médecine* for August, 1864.

Frerichs, the walls of the cellules are destroyed: they say, that it is hardly possible to recognise even a few isolated nuclei in the affected parts, a fact which may depend on their being lost amid the amorphous and fatty matter. There must be both destruction of the structure of the cellules and an excess of fat. When the lesion is less advanced, some hepatic cellules remain; but they are infiltrated with fatty matter and biliary pigment. The structural alteration of the liver is never uniform throughout the entire parenchyma, there being healthy portions amid those which are diseased. The alteration of structure advances with greatest rapidity in the left lobe; and this lobe also often presents a yellow, ochrous appearance on the surface and where a section is made; whereas, in the right lobe, it is only in isolated portions that the altered appearance is seen.

Sometimes, however, the destruction of the cellules is so generalised, that the weight and volume of the organ have decreased to the extent of one third or even two thirds: the liver is then diffluent, and of a yellowish colour, having no longer the usual granitic appearance: moreover, its fibrous envelope, the capsule of Glisson, appears too large, and exhibits numerous wrinkles.

The German school of pathologists has erred in applying the term "atrophy" to this alteration of the cellules; and M. Ch. Robin has done well to point out that there exists *destruction*, and not atrophy of the hepatic cellules, with or without change in the volume or consistence of the liver.[1] The actual state of scientific knowledge does not enable us to make any positive statement as to the condition of the hepatic vessels or parenchyma, except that there is softening and fatty infiltration: sometimes, the softening must to a certain extent be attributed to putrefaction. The biliary ducts are not engorged with bile; and it is only in exceptional cases, that the existence in the gall-bladder of a large quantity of bile has been ascertained.

The facts which I have now stated in relation to the *destruction of the hepatic cellules* are quite in accord with the microscopic examination of the liver of our patients in the Saint-Bernard's and Saint-Agnes's wards, and of the patient of Dr. J. Worms, whose case was so kindly communicated to me by that gentleman. But let me add, that Hanlon, Griffin, Budd, Monneret, and Robin, have not only ascertained that the physical characters of the liver may be

[1] Robin (Charles):—Note sur l'état anatomo-pathologique des éléments du foie dans l'ictère grave. [*Mémoires de la Société de Biologie*, 1857, p. 9.]

normal, but likewise, that histological examination gives, in many cases, only negative results. It is unnecessary to insist at length upon the importance of such unquestionable scientific facts as those now mentioned: if malignant jaundice can exist without any lesion of the liver, such lesion is not necessary for the production of the disease, and, *à fortiori*, cannot be the cause of the change in the blood.

Lesion of the liver, then, has only an importance which is secondary, and may be compared to the alteration observed in the kidneys, the spleen, and sometimes in the muscular fibres of the heart. Frerichs, and before him Budd and Spaeth, noted a fatty state of the renal parenchyma: the straight and flexuous tubuli, when examined under the microscope, presented a more or less extensive desquamation, and their epithelium was either destroyed or charged with amorphous and fatty matter. Observe that in malignant jaundice, the urine has been found deficient in urea, and the blood to contain it in excess; while also, there existed albuminuria apart altogether from renal hemorrhage. These clinical and anatomical facts show, that sometimes the renal function is at fault, as so often happens likewise in malignant diseases, fevers, and many toxæmic affections.

The spleen is often increased in size, soft, and very friable. Lesions met with in other organs, I regard as of secondary importance: the majority of them depend upon stasis of the blood and hemorrhages into the parenchyma or mucous membrane, phenomena most frequently observed at the base of the lungs or in the mucous membrane of the stomach or intestinal canal. No important lesion of the nervous centres has been observed; and the meningeal hemorrhage, to which I have already referred, was merely an occurrence consequent upon the general hemorrhagic tendency. But the blood which is found in considerable quantity in the venous system, particularly in the venæ cavæ and right side of the heart, has always presented the characters which it exhibits in septæmic affections: it has been of a pitchy, of a dull violet colour, diffluent, and has (according to Frerichs) contained leucine and urea in appreciable quantities. The heart was often very flaccid; and Dr. Hecker, as well as Dr. Peter (in a recent autopsy), detected granular and fatty degeneration of the primary muscular fasciculi.

I have just been saying, that atrophy of the liver is a structural change which is likewise met with in numerous cases of blood-

poisoning. There are indeed some cases of toxæmia, accompanied by jaundice and numerous hemorrhages from the mucous membranes and into the parenchymata, which in respect of symptoms, not less than lesions, resemble malignant jaundice, and leave, even at the anatomical table, the mind in a hesitating state. The following case, which has just come under our notice in Saint-Agnes's ward, is one of those calculated to leave the diagnosis in suspense.

On July 26th, a man, aged thirty-two, was admitted to our hospital service with slight cyanosis of the face and contraction of the superior extremities. He had been suddenly seized, twenty-four hours previously, with painful cramps in the calves. A little later, very profuse bilious vomiting supervened, which continued all night. Next morning, the cramps had ceased in the legs, and the painful contractions were experienced in the superior extremities.

On the morning of the 27th, you saw the man of whom I am speaking: he then had slight cyanosis of the face, an exceedingly feeble, whispering voice, a very remarkable state of contraction in the superior extremities, particularly in the right, which was the seat of great pain. There was no albumen in the urine.

On the 28th, forty-eight hours from the first manifestation of the symptoms, jaundice appeared: and there was persistent pain in the right hypochondrium.

On the 29th, I remarked to you that there was an increase in the intensity of the jaundice; and that during the morning, slight epistaxis from the right nostril had occurred—the nostril by which, according to Galen, epistaxis takes place in affections of the liver.[1] The liver was enlarged, so as to pass three finger-breadths beyond the ribs: it was hard, and pressure upon it caused pain. There was acute persistent pain in the epigastrium. The patient said that he felt worse; and his condition was evidently aggravated. The prostration of strength was absolute: the voice was very feeble and languid; and he complained of headache. Throughout the whole spinal column, from the neck to the loins, he experienced very acute pain. There was some contraction of the muscular masses of the neck and spine, which were painful on being pressed: an increase of pain was occasioned by raising the inferior extremities, previously extended, a circumstance which indicated irritation of the spinal cord. The pulse was 112: respiration was loud and quick. Some

[1] "Oportet autem per directum fluere sanguinem, ex dextra quidem nare hepate affecto . . . ex sinistra autem liene." [*De Crisibus, Lib.* III.]

fine râles were heard at the base of the right lung; but on account of the patient's debility, auscultation was difficult. The remainder of the day was passed in a state of somnolence. The patient had the calm of stupor, but no delirium: he realised the gravity of his condition, and said that he was dying. The vomiting and contractions ceased. His slumber was easily broken by making such pressure on the arm as interrupted the venous circulation. Moreover, he gave indications of suffering acute pain when he was touched on the abdomen or chest, and still more, when touched on the neck. He swallowed slowly, and with difficulty. He died at one in the morning, without a struggle, without having lost consciousness, and without having had any recurrence of nasal or intestinal hemorrhage.

At the *autopsy*, made by Dr. Peter, then my *chef de clinique*, a sanguineous effusion was found at the lower part of the mediastinum: the blood was black, and encysted in the neighbourhood of the pericardium. Blood was also infiltrated in the whole extent of the mediastinum. The subjacent cellular tissue of the parietal pleura was infiltrated with blood, so as to give to the entire extent of that membrane a blackish red colour: but there was no hemorrhagic transudation into the pleural cavity. At the summit of the left lung, there was hemorrhagic effusion, encysted by a false membrane: this sanguineous collection measured eight by four centimètres. There was no pleuritic effusion in the left side. Into the right pleura, there was slight sero-sanguinolent exudation. Under the diaphragmatic pleura, on both sides, there was an exudation of blood.

In respect of size, the heart was normal; but it was flabby and very pale. The valves were healthy.

The spleen was twice its natural volume: it was friable, but not diffluent. There was hemorrhage from the hilum.

Submucous and interstitial hemorrhage occupied the whole of the great cul de sac of the stomach, without there being any rupture of the mucous membrane or effusion into the interior of the organ, which was in other parts quite healthy. The small intestine was absolutely healthy, except that in its lower third, where psorenteria existed, the solitary glands appeared on the surface like so many millet seeds. Peyer's glands were healthy.

The liver, which was of augmented volume (particularly in the right lobe), was yellow, anæmic, and fatty.

The kidneys, particularly their cortical portions, were anæmic: in size, they were normal: the suprarenal capsules were healthy.

The pancreas was everywhere injected and friable: there was no hemorrhage into its peripheric cellular tissue.

The parietal peritoneum was much injected, but was not the seat of hemorrhage.

The brain and spinal cord were healthy. Neither the cerebral nor medullary meninges were injected.

Microscopic examination disclosed fatty degeneration of the liver: the hepatic cellules were irregular in shape, being swollen out by little drops of fat, which were soluble in ether. Others were granular, but changed though the cellules were in form, they had not disappeared, as in acute atrophy of the liver. Granular alteration of the kidneys, particularly of the cortical substance, was observed: there was fatty infiltration of the cellules. Granular degeneration of the muscles of the heart, the normal striated arrangement of which was much less evident than usual, at certain points had quite disappeared. The great pectoral muscles had undergone a similar change.

Frequent hemorrhages occur in cases of poisoning with metallic poisons, such as the salts of antimony and arsenic: fatty degeneration is likewise met with in these cases, and in poisoning with phosphorus; but the hemorrhages and fatty degeneration of the liver and kidneys are, as we have seen, the consequences or the characteristic lesions of malignant jaundice. Now, we have been told that this man had been working for a long time in a manufactory of arsenious acid, but had discontinued that employment for a year. It could not, therefore, be supposed that the metallic poison had remained all that time in the system without manifesting its effects. On the other hand, this man was addicted to alcoholic excesses: these habits rendered him subject to a profuse diarrhœa, which explained the psorenteria found at the autopsy; and it is likewise possible that the alcoholism was the cause of a consecutive change in the structure of the liver. Finally, this alteration may itself have been the starting-point of all the symptoms which in the aggregate receive the name of "malignant jaundice."

We now see the category of suppositions to which we can appeal in respect of the symptoms, the etiology, and the lesions of this disease. To elucidate the question of poisoning, I caused the liver and the kidneys to be carefully subjected to a chemical examination,

when, as I expected, no trace of arsenic was detected. Nor was there any phosphorus found. It appears that this man succumbed under an affection which commenced with choleraic symptoms and cramps, after which the jaundice supervened. Under these circumstances, my diagnosis was—malignant jaundice. At the autopsy, we found lesions which explained the jaundice and the death, but threw no light upon the genesis of the symptoms.

Malignant jaundice may occur *at all ages;* but the subjects of most of the published cases are adults. I do not know of any case occurring in infants of what can properly be called malignant jaundice. This is a point regarding which I must make some remarks, so that I may not seem to be opposed to a statement made in a contrary sense to the Société Médicale des Hôpitaux. There is, it is true, a kind of jaundice in infants depending on retention of bile, regarding which Dr. Porchat has written an excellent work; and which had before been the topic of very important clinical remarks by Burns, Gardien, Underwood, and Rosen. According to all of these authors, the jaundice of very young infants terminates in death, when there is a continuance of constipation for more than three or four days: they, consequently, recommend the administration of purgatives with a view to cause the flow of bile into the intestine. But none of the authors whom I have quoted, have described the occurrence of typhoid symptoms in these cases, and most of them are silent on the etiology of the retention of the bile.

Dr. Porchat, in his thesis (1859), after remarking that the etiology of jaundice in very young infants has been little studied, proceeds carefully to investigate the causes of this malady. In a first category of cases, anatomical examination demonstrated to him that the biliary ducts were free, but that the bile, thick and abundant in the gall-bladder, had been unable to reach the duodenum, as was proved by the whitish appearance and chemical analysis of its contents. In a second group of cases, the biliary ducts were absent, or the ductus choledochus was represented by a fibrous cord. In all the cases, the bile was secreted, but not excreted; and consequently, it must have been absorbed by the veins and lymphatics, as was proved by an examination of the blood, urine, and parenchymata, which were tinged by the colouring matter of the bile.

Retention of the bile, not dangerously poisonous to the adult, is sufficient to cause serious consequences to very young infants. Observe, Gentlemen, that this is not a matter of mere hypothesis:

comparative pathology, and the experiments of Claude Bernard[1] have proved, that retention of bile proves fatal to puppies after some days, while adult dogs do not succumb from complete obstruction of the ductus choledochus. In 1844, Dr. Campbell[2] published three cases of jaundice complicated with hemorrhage from the cord, and which terminated in death. In these cases, the retention of bile was the consequence either of arrest of development, or of contraction of the excretory apparatus, or possibly of obstruction of the choledoch duct by a biliary concretion. In all the cases, the jaundice was of a very decided character: in two of them, there was umbilical hemorrhage: and in the third case, although there was no hemorrhage from the umbilicus, the infant died in a state of coma after vomiting a fluid resembling coffee-grounds.

It appears then, that very serious symptoms and even a fatal termination may occur in biliary retention in very young infants, or in infants under one year of age. Cases of this nature may be ranged side by side with the very unusual cases in which the retention of bile in an adult has brought on fatal consequences; but again I say, that malignant jaundice of the adult may exist without lesion of the liver, and is never caused by obstruction of the biliary ducts.

Such being the fact in relation to the fatal jaundice of very young infants, let me remind you that malignant typhoid jaundice is chiefly met with in adults. Mental depression seems to have a large share in producing it: wretchedness and excesses hardly act otherwise than as debilitating causes. Cases of this disease, collected by Hanlon and Griffin, which occurred in persons apparently quite healthy, and not seemingly suffering from destitution appeared to demonstrate to me the influence of middle courses. Two patients were pointed out by M. Hérard, both of whom inhabited the same furnished lodgings, were attacked at an interval of only a few hours, and both died at the Hôpital Lariboisière. I propose to make use of these facts to demonstrate the nature of the disease. As for depression of spirits—and to this point I revert intentionally—there can hardly be any doubt as to the reality of its consequences, particularly if we remember the importance which the older authors

[1] Bernard (Claude):—Leçons de Physiologie Expérimentale appliquée à la Médecine:—Leçons sur les propriétés physiologies et les altérations pathologiques des liquides de l'organisme. 1859.

[2] Campbell:—British and Foreign Medical Review. T. XX, p. 553.

attached to low spirits produced by diseases of the stomach and liver, recalling to mind their action on the nervous system. Finally, let me add, that the cases of Frerichs,[1] in opposition to those of Spaeth, seem to show that pregnancy may be a cause of malignant jaundice; for in twenty-two women attacked by it, eleven were with child.

I now come to consider the nature of malignant jaundice: I shall with brevity examine critically some of the different theories which have been advanced. Rokitansky and many others are satisfied to ascertain the anatomical lesion, but Henoch and Dusch have endeavoured to explain the destruction of the hepatic cellules by enunciating the double hypothesis of the existence of paralysis of the biliary radicles and of the hepatic vessels. It is not necessary to discuss fancies of this description: let me merely remark that Dusch believes that the elements of the cellule being dissolved, are absorbed, and so produce secondary toxæmia, giving rise to the nervous symptoms which characterise the second stage of malignant jaundice.

Bright was the first to raise the question, whether the hepatic lesion was the primitive phenomenon or only a consequence; but he proceeded no farther, and regarded the alteration in the structure of the liver as an inflammation of the organ. Budd, who had observed many cases of different kinds of malignant jaundice, derived, from his clinical experience, numerous objections to the different theories which had been previously emitted. He stated that malignant jaundice could not be merely an inflammatory affection, because hepatitis was not generally followed by the characteristic symptoms of typhoid jaundice. The general symptoms could not be the consequence of mere retention of bile, because protracted jaundice is constantly being met with unaccompanied by the slightest nervous disturbance. Moreover, as I have already remarked, retention of bile is inadequate to lead to disorganization of the hepatic cellules.

Therefore we may conclude with Budd, that typhoid malignant jaundice is not the immediate result of biliary retention, and that the alteration of the hepatic cellules, when it exists, is dependent on a different cause. But, admitting that the retention of bile does not lead to serious consequences in respect either of the liver or of the general system, we must look elsewhere than to the liver (which

[1] Frerichs:—Op. cit., pp. 261—262.

need not be the seat of any lesion), for the cause of typhoid jaundice.

The symptoms of typhoid jaundice, their sudden appearance, particularly the signs of moral and physical prostration resembling the symptoms which usher in fevers and toxæmic affections, lead to the belief that a poison or morbific germ which has either entered the organism from without, or been generated within it, is the cause of all these disturbances, which first appear in the nervous system, then in the liver, spleen, kidneys, and heart. Nearly similar phenomena are met with in dothinenteria: a feeling of general discomfort, and a prostration of strength mark the beginning of the malady, the moment that is to say, when the morbid poison begins to take effect: subsequently, the disease manifests itself with the usual train of symptoms according to the form it assumes; and the special intestinal alterations are secondary results.

The morbific poison may enter the system from without, that is to say, may have its origin in vicious hygienical conditions. The cases of Hanlon and Griffin (quoted by Graves and Budd), and those observed by Dr. Hérard in the Hôpital Lariboisière, justify the conclusion, that the insalubrity of certain habitations, particularly during very hot weather, may originate a morbific element analogous to that which engenders typhoid fever through overcrowding, and to that which causes yellow fever and bilious fever in tropical climates. Here, let me remind you that Dr. Carville's memoir seems to prove that malignant jaundice may occur in an epidemic form.

The source of the morbific poison may be in the individual himself, when he has been long subjected to physical fatigue and moral depression. The equilibrium of the functions may be so modified, that as a sequel of some determining cause of variable nature, the liver may become the seat of a functional lesion, and typhoid jaundice may declare itself. Recall to mind the case of the patient sent in by Dr. Firmin, and who occupied bed 30 of Saint-Bernard's ward. This woman, aged fifty-three, had become reduced to great misery, through pecuniary losses and great mental distress. For a fortnight preceding her admission to hospital, she had no longer spirit left to work: she felt tired, and had no appetite. Her medical attendant, at his first visit, found that she had both typhoid fever and jaundice. She died in a comatose state some days after admission to hospital. It is probable that unfavourable hygienical conditions and profound sorrow had brought about an alteration in the whole

organism; and that from this change proceeded the jaundice and the typhoid symptoms. There was no organic lesion found in the liver or intestinal canal.

In similar cases, the presence of jaundice is sufficient to prove that the hepatic functions are disturbed; and in some patients, the functional disturbance might in itself lead to serious consequences. The passage of the bile into the blood, which does not generally produce much inconvenience, may, in delicate subjects, be the starting point of fatal consequences. This was observed by Graves, who, to prevent the nervous symptoms liable to occur in such cases, lost no time, as I have already told you, in favouring elimination of the bile by administering diuretics and sudorifics.

There is more reason to dread nervous complications when percussion reveals diminution in the volume of the liver, that is to say, acute yellow atrophy of the organ. Budd, indeed, while he admitted that the poison which engendered the nervous symptoms at the beginning of the icteric attack might suffice to produce secondary nervous symptoms, thought that some share must be attributed to the lesion of the liver, because the disorganised anatomical elements by being absorbed, augment the action of the original poison.

To all the other morbific causes, primary or secondary, must be added disturbance of the function of hepatic hematosis, as has been judiciously observed by Professor Monneret. Bile is not the only secretion of the liver. Into the liver opens the entire system of the vena porta: in it, the portal blood demands a special elaboration indicated at its exit from the liver, by increase of its temperature, and its containing hepatic sugar. This process does not arrest the blood-forming function of the liver, as is shown by comparing the blood of the vena porta with that of the subhepatic veins. To form bile, the liver removes from the blood all elements which if not eliminated must prove injurious to the system.

Thus we see that the liver, which Galen regards as an organ of hematosis (for the same reason that the lungs are so regarded), cannot be suddenly and permanently annihilated by the disease, without the suppression of function thereby induced acting injuriously upon the composition of the blood, and producing a corresponding influence upon the nervous system. Now, if the chronic and slowly progressive alterations in the structure of the liver lead to no serious modifications in the composition of the blood and functions of the nervous system, neither can any such modifications arise in the

cases in which hepatic hematosis is suddenly and permanently suppressed.

It follows, therefore, that malignant or typhoid jaundice (also called *fièvre jaune nostras*) is a general disease, similar in its nature to the pyrexiæ, characterised by disturbance of the nervous system, and by structural changes of the liver, spleen, and heart, which changes are special, though not invariably present. It also follows, that this disease is nearly always fatal; and that it appears to be the consequence of a poisoning originating sometimes in the surrounding medium, and at other times in the organism itself.

Gentlemen, I must enter an emphatic protest against the doctrine that there exists a similarity between malignant jaundice and yellow fever. I had, as you know, an opportunity, in the early part of my career, of seeing a great many cases of yellow fever; and when I afterwards met with cases of malignant jaundice, I had no difficulty whatever in recognising the difference between the two diseases.

There is one palpable point on which it is easy to agree; that is, the absence of jaundice in yellow fever: in upwards of a thousand yellow fever patients who came under my observation, not one had jaundice. I recollect two soldiers affected by jaundice being admitted to the military hospitals which I visited daily during the epidemic: the attendants in the wards, though they had never been instructed how to discriminate the one disease from the other, were perfectly satisfied that the two classes of patients were not suffering from the then epidemic yellow fever, and the medical officers without the least hesitation adopted the same view: the tint of the skin was itself sufficient to show the existence of an entirely different disease. When a more minute scrutiny had been made into the distinctive phenomena of the two diseases, there remained no longer room for any one to entertain the slightest doubt on the subject.

When we proceed to compare malignant jaundice with yellow fever, looking to the symptoms and anatomical lesions irrespective of the jaundice, it seems surprising that cautious and experienced physicians should regard as similar two affections which present such different characteristics; but the astonishment ceases when it is borne in mind, that those who have instituted this comparison never saw the epidemic, and that those who had studied yellow fever, only knew by books the malignant jaundice with which they compared yellow fever.

In yellow fever, the extreme violence with which the fever sets in, the great severity of the pains in the loins, the indescribable discomfort of which the patients complain, can only be compared to the similar symptoms which usher in an attack of confluent smallpox; while in malignant jaundice, the initial period is rarely invested with such violent characteristics. Hemorrhages from the stomach and intestinal canal are sometimes observed in malignant jaundice, but they are not profuse; whereas, in yellow fever, black vomit, and dejections of a similar kind are seen in nearly all the fatal cases, a circumstance to which the disease owes its names "vomito negro" and "vomito prieto." Black vomit, which in one of the diseases is of rare occurrence and small importance, is a principal characteristic in the other.

It is now held that real jaundice [*jaunisse réelle*]—the affection properly called jaundice—has an almost invariable character in malignant jaundice [*ictère malin*]; and that in it the urine always contains a large quantity of biliverdin, and acquires a still deeper colour on the addition of tincture of iodine and nitric acid, whilst icterus [*ictère*] properly so called, is never seen in yellow fever, in which disease the urine is as red as in acute rheumatism, is often suppressed, and never contains the colouring matter of the bile. It is my conviction then, that the similarity which certain authors have endeavoured to establish between the two diseases is strained; and can only be maintained by physicians who have not made them a subject of comparative study.

Malignant jaundice can hardly be confounded with any other disease, particularly under the climacteric conditions in which I have observed it. Typhoid fever complicated with jaundice, a complication, however, which is very unusual, can hardly lead to a mistake, except during the first days of the attack: but the intensity of the icteric tint, and the various hemorrhages, particularly those from the gastric and intestinal mucous membrane, which take place during the early days of jaundice, do not long allow the nature of the case to remain in doubt.

I should be going beyond the limits of my subject, were I to dwell at length upon the differential diagnosis of malignant jaundice and the malignant bilious fever of tropical countries. It is necessary, however, that I should here mention that the two principal conditions which constitute malignant jaundice, the yellowness and the hemorrhages, are also met with in the bilious fever of the tropics, which is

distinctively characterised by its more or less marked remittent type, and repeated rigors.

Though in the hepatitis of our climate, as in malignant jaundice, there is a yellow colour of the skin, and frequent hemorrhages, we learn, from clinical observation, that in hepatitis, the yellow colour of the skin is less intense, and shows itself more slowly; and that the hemorrhages are less profuse. On the other hand, the fever is more violent than in typhoid jaundice.

The treatment of idiopathic hemorrhagic jaundice has not generally been successful. It appears, that observers have almost always treated the symptoms: hemorrhages have been combated by the mineral and vegetable acids, and the vomiting by iced drinks and gas-charged beverages. Preparations of cinchona have seemed to sustain the strength, and retard the death of the patient. Dr. Hérard prescribed, with temporary benefit, emetic doses of ipecacuan to one patient, who, however, died on the eighth day of the disease.

Perhaps purgatives, and in particular saline purgatives, which have a special action on the liver, may be prescribed with advantage. In pursuing this plan, we should be adopting the treatment of yellow fever successfully followed in America, and should also be responding to the indication supplied by constipation, imitating nature, moreover, which often selects the intestinal mucous membrane as the medium by which to eliminate poisons.

LECTURE LXXXI.

SYPHILIS IN INFANTS.

Syphilis in the Fœtus :—*Abortion : Pemphigus : Suppuration of the Thymus Gland and Lungs.*

Syphilis in the Infant :—*Pox rarely shows itself before the second week, or after the eighth month.—Slow Form : Subacute Form : Symptoms : Coryza : Fissures : Ulcerations and Mucous Crusts at the mouth, anus, and folds of the skin : Cutaneous Eruptions, Roseola, &c.—Peculiar Tint of the Face : Characteristic Physiognomy of the Syphilitic Infant. — Cahexia. — Visceral Lesions.—Pathogenic Conditions of Syphilis in the Recently Born Infant.*

Hereditary Syphilis :—*Transmission by the Mother : by the Father.*

Acquired Syphilis.—*Syphilis may be transmitted to Nurse by Syphilitic Nursling.—Has the Nurse been infected* in coitu, *or by her Nursling ?—Transmission of Syphilis by Vaccination.—Transmission of Syphilis from the Fœtus to the Mother.—Treatment of Congenital Syphilis.*

Gentlemen :—To-day, I enter upon the discussion of one of the most delicate and most controverted questions in pathology ; and although it is my intention to confine myself within its narrowest limits, I neither wish to conceal from myself nor from you that it is a subject beset on every side with difficulties.

Syphilis, in whatever manner it may be engendered in the system, holds the first rank among those affections the study of which belongs exclusively to clinical science, and does not admit of assistance from any other science. We are shut out from experiments on the lower animals ; and experiment limited to the human species, is, as

you know, liable to a thousand sources of fallacy. It is perhaps by taking syphilis as an example, that one would arrive more certainly at the way to give an account of curative methods and proceedings, and of the scientific value of medicine when left to its own resources.

Impressed though I am with the importance of this study, convinced though I am of its profitable nature, even when problems are discussed for the solution of which the elements do not exist, I have shrunk from pursuing it, possibly from a sense of the magnitude of the task. I shall not, therefore, discourse to you here regarding syphilis in recently born infants: you have had very frequent opportunities of observing it in a state of full development. Nevertheless, while I thus restrict myself, I cannot but look back regretfully upon the field which I have abandoned.

The special hospitals, both those for men and for women, present you with the most ample materials, and your teachers second your inquiring zeal; but in addition to these precious opportunities, there are others, among which are our clinical services, where in place of *the rule* you will find *the exception*—a system of instruction not less necessary.

Observe how the science of syphilis is constituted, and how the doctrinal revolutions accomplished under your eyes are organised. In the hospitals for syphilitic males, laws are laid down with an authority which facts do not oppose. The dogmatism of observers is sincere, because their conclusions are derived from cases occurring under similar conditions. Science is conducted upon this basis, till the time comes when the physicians placed in another sphere, being brought into contact with doubtful cases, raise objections, and at last—as always happens—pass from hesitation to formal opposition.

Were examples required to illustrate a subject so familiar to you, infantile syphilis would itself supply them of the most conclusive kind. In that domain of science, opinions resting upon foundations of the least possible stability have held their ground, because there was an unwillingness to break the unity of a theory; and Hunter himself, despite his great talents, resolutely formulated principles strikingly contradicted by the very facts upon which he sought to establish them.

It would be difficult for you to make a complete study of pulmonary tuberculisation in an hospital devoted to phthisis; and in

the same way, lock hospitals, in which only confirmed cases of syphilis are received, do not exhaust the category of observable venereal cases.

In these wards, Gentlemen, you are placed in the most favourable circumstances for studying syphilis as it occurs in early infancy. In juxta-position with recently born infants presenting the most characteristic symptoms of the disease, you find others affected with uncertain eruptions, and others, again, in whom there are exanthematous and ulcerous lesions of great gravity, regarding which there cannot exist even a suspicion of syphilitic infection.

It is well that you should profit by this instructive aggregation of cases: and the remarks which I am going to make to you will originate from our surroundings—from the cases which we observe together—for I attach great importance to keep you in a field of observation which is real life. Far from confining myself to the exposition of established opinions, I shall enter upon unsettled questions, upon risks of wrong conclusions, and upon unsolved problems, because there are circumstances in which it is worse than a mistake—it is a fault—for a physician to arrive prematurely at a conclusion.

To begin, let us consider the recently born syphilitic infant, reserving the more obscure questions of pathogeny.

Syphilis may attack the infant *during intra-uterine life;* or it may not manifest itself till after birth, in which latter case, there are no signs at birth of the disease, the germ of which exists, and will develope itself sooner or later. In the second case, the entire process of evolution takes place under our eyes: we see the disease in its very beginning, and we follow it through all its phases. In the first case, on the other hand, the commencement escapes our observation, the progress is uncertain, the diagnosis more dubious, and the description less precise.

The accoucheurs of former times stated, and modern practitioners have confirmed the fact, that syphilis of parents, at least syphilis of the mother, is a frequent cause of *abortion*. It has been said that this predisposition which causes syphilis has been exaggerated. I do not know the conclusions which unattainable statistics might justify, but I do know, and hesitate not to affirm, that when you are called in by a woman in whom premature labour has become habitual, you would do wrong were you not to regard

venereal contamination as among the supposable causes of miscarriage, causes of which you ought to make a list on which to adjudicate, before you form your opinion.

But it is not enough, unknown to the family, to have inscribed syphilis as one of the probable causes to be successively eliminated one after another: it behoves you to inquire, whether this cause was uncertain and incomplete, or whether it authorised such a supposition.

To say positively that repeated abortion is often of syphilitic origin is to say too much and too little. Generally, labour takes place very nearly at the full term, and terminates in the birth of a dead child. When the fœtus is born alive, and viable in proportion to its age, when the too early accouchement is entirely attributable to the mother, there is no ground for including syphilis among the conditions, in point of fact so obscure, which have curtailed the duration of pregnancy. Maternal syphilis does not appear, according to the most complete information which we possess, to extend its influence to the vitality of the placenta; and I am not acquainted with any lesion of the placenta possessed of an undoubted specific character.

And yet, we may ask, which we could not have done some years ago, up to what point is this immunity absolute? Syphilis was formerly regarded as comprised within a circle formed by a small number of symptomatic indications localised in the skin, or in the mucous membranes conterminous with the skin, and extending, but slowly, to the osseous tissue: it was supposed not to invade the splanchnic organs. The placenta did not seem to be more susceptible than the liver, spleen, or lungs of a venereal degeneration which had not been directly observed, and was in contradiction to the ordinary laws of the disease.

In the present day, a new direction has been given to scientific inquiry, and the impossible has ceased to exist: to the alterations in the integuments and bones, we have now to add parenchymatous alterations discovered by the aid of the microscope, and the existence of which had been foreseen by clinical observers. In this department, nearly everything yet remains to be done. I call your attention to paths hitherto scarcely explored, being convinced that you will not think, like some persons, that it is necessary to wait until the truth has verified research.

Some problems remain for future elucidation: but it is a well

established fact, that the cause of syphilitic abortion is the death of the fœtus *in utero*.

Does there exist any known symptom characteristic of the affection which has deprived the fœtus of life?—For my part, I admit that I cannot point out to you any really significant lesion; and I incline to the belief, that those authors who have been most explicit in a contrary sense would have done better had they imitated my reserve. You will be told about the general appearance of the still-born child, the colour of its integuments, the maceration of its epidermis, the ulcers on its body, and the hideous deformities which it presents. The more graphic the picture which is drawn, the more necessary is it to be distrustful of its representations. Once on a time, physicians participated with men of the world in regarding all rebellious and obstinate ulcers as venereal: it is from that period that we date descriptions undoubtedly destined to impart disastrous consequences to syphilis.

An infant is born at or before the full term; it lives, but has contracted, during fœtal life, a malady which at birth was already in process of evolution, and destined to prove fatal. It is to this syphilis, developed in the infant before its birth, and continuing during the first days of extra-uterine life, that some authors have assigned characters so precise as to enable them to base a diagnosis on them: I refer to pemphigus, to alterations of the thymus gland, and to pulmonary lesions.

For two reasons, I shall be brief on this subject; first, because you have very few opportunities in this hospital of seeing infants at birth, and it is my plan to lecture on clinical cases which you have facilities for observing: and in the second place, because the discussions regarding these specific manifestations are of a too recent date for me to require to bring them before you at great length.

None of these lesions are met with at a more advanced age, when syphilis shows itself by many varied and indisputable signs: they thus possess the twofold specificity of being of a venereal character, and peculiar to the fœtus.

Pemphigus makes its appearance within so few hours after birth, that the preparatory stage has evidently been proceeding during intra-uterine life. The bullæ, which are chiefly situated on the palms of the hands and soles of the feet, form rapidly, become filled with semi-purulent liquid, burst, and then give place to ill-conditioned ulcerations. The surrounding parts have a bluish colour, like

most of the cutaneous inflammations of recently born infants. The general health is radically impaired; and there appear the usual signs of infantile cahexia, which, as you know, almost invariably terminate in death, whatever may have been their origin.

It cannot be disputed, that pemphigus is met with in very young infants: it is an equally well established fact, that in them, as in adults, this affection is the expression of a deep-seated and radical disturbance of the system: the only question open to discussion is, whether this pemphigus is syphilitic. On the one side, it is objected, that the bullæ have no specific character, neither in themselves individually, nor in the manner in which they are grouped—that pemphigus is one of the rarest complications of confirmed syphilis—and that all the causes of pemphigus find their legitimate, and so to speak, classical place in puny recently born infants. These objections have a value which cannot be ignored: they are met by an argument which, though indirect in its nature, is not the less important. "In most of the cases in which pemphigus exists," says Professor Paul Dubois, "I have been able to verify the signs of former syphilis in the parents, or to obtain from them convincing evidence that they had the disease."[1] Other observers declare that they have been less successful in their search for evidence of this kind, although they have pursued similar inquiries. The settlement of the question, therefore, must depend upon the vigour of the statistical investigation.

I have sometimes mentioned to you a fact, which I had the opportunity of observing along with one of my professional colleagues. He called me in to see a child, about fifteen days old, in which the most precise signs of syphilis existed. The father had had a Hunterian chancre, and secondary symptoms, of which he believed that he was perfectly cured. I told him plainly that his child had congenital syphilis: I asked him whether he himself had not still some traces of syphilis. He replied in the negative; but nevertheless, I proceeded to investigate the case minutely, and discovered, without difficulty, exostoses of the tibia, which left no doubt as to the disease. He then told me, that fifteen months previously, his wife had been delivered, at the seventh month, of a still-born child, which he had preserved in spirits of wine. He showed me the little dead

[1] Dubois (Paul): — Syphilis Congénitale. [*Bulletin de l'Académie de Médecine*, 1851: *T. XVI, p.* 980.]

body; and on its skin, I distinctly perceived numerous traces of pemphigus.

So far as I was concerned, this demonstration did not amount to more than the establishing of a probability; and several physicians who participated in this indecision finally accepted a compromise. They considered that maternal syphilis had determined a sort of cahexia in the fœtus, which had led to an eruption of bullæ which was not specific. By accepting this too facile hypothesis, you will imprudently open a door which you will with difficulty be able to close. Support is thereby given to those who see in the cahectic diseases of early infancy, certain derivations and metamorphoses of—to use the fashionable phrase—ancestral syphilis [*syphilis des ascendants*]. This is a dangerous direction for theory to take—one which leads, and has led, to rash generalisations, in which imagination is substituted for observation, and all morbid manifestations are merged in one arbitrary pathogenesis.

Suppuration of the thymus, and *suppuration of the lungs*, have furnished two observers, whose sagacity is known to you, with the materials for interesting monographs. These lesions which sometimes exist separately, and sometimes together, are of rare occurrence, and their relation to the health of the father or mother is still matter of uncertainty.

That is the limit of our knowledge of syphilis in the fœtus. I pass over, without remark, alterations of the liver, of which I shall afterwards have to speak to you, and syphilitic peritonitis, regarding which Simpson has said a few words.[1] The only manifestations attributed to intra-uterine syphilitic taint are first of all abortion, then pemphigus, suppuration of the lungs, and still more, suppuration of the thymus.

When the last vestiges of intra-uterine life have disappeared, when the infant in virtue of respiration, and particularly by its changed mode of alimentation, has passed into a new life, syphilis, till then absolutely latent, makes its existence known by signs which easily escape detection. I propose, therefore, to direct your attention to a somewhat more detailed account of symptoms.

It is a law which holds good in the whole domain of medicine, that little circumstances have often a leading significance: but this fact is specially true in respect of syphilis, if any difference of degree

[1] Simpson (James Y.):—On Peritonitis in the Fœtus.

as to the truth of the law can be admitted. In infantile syphilis, the diagnosis can be established only by patient inquiry into minute circumstances; and in cases of this kind, descriptions are good only when they are long.

In the infant, which in coming into the world bore no certain traces of venereal infection, *pox rarely developes itself before the second week;* and it is very exceptional for the disease to make its first appearance after the eighth month. Usually, it appears about the fourteenth or fifteenth day after birth. These dates, which I gave so far back as 1847, in a memoir which I published conjointly with my friend Dr. Lasègue,[1] have been confirmed by all subsequent observers, and are in harmony with those indicated by our predecessors; if we except cases of doubtful authenticity.

The manifestation of the symptoms, therefore, is preceded by a more or less prolonged incubation, during which the physician cannot discover the slightest indication of the impending malady. I am well aware that the physicians of the Hôpital des Enfants Malades (to whom the science of infantile syphilis owes so much useful information) believe in a sort of premonitory cahexia. There is no such condition. The doomed infant either has or has not (as the case may be) all the attributes of robust health up to the day on which the first symptoms declare themselves. I go still farther, and maintain that vigorous health does not always exercise the influence attributed to it, upon the progress of syphilis. We see infants, to all appearance in vigorous health, rapidly decline under the stroke of syphilis, while others, more puny, bear up under a similar shock. In the infant, as in the adult, two influences are in operation, viz. the activity of the disease, and the resistance of the patient; but it is difficult to estimate the power of resistance, till we know the extent of the proofs to which it is subjected.

But to make this possible, it would be necessary for the infants to be of the same age, identical in apparent health, and affected with syphilis in exactly the same degree of intensity. In some, irrespective of treatment, evolution is slow, passive, essentially chronic from the first: in others, it is active, subacute, and semi-febrile: the appearance of the patient is greatly changed, complications increase, which ultimately induce a secondary derangement of health more dangerous than the original malady.

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[1] Trousseau and Lasègue:—*Archives Générales de Médecine*, 1847.

Bear in mind, Gentlemen, that this entirely clinical diversity of evolution is capable of supplying in respect of treatment important counter-indications; that it renders necessary certain therapeutic reservations: and that it explains why the treatment of syphilis in infants is not so common-place as in adults.

The *signs by which the constitutional affections are manifested are numerous,* and do not occur in an order sufficiently precise to authorise a chronological classification. Many symptoms are wanting, and their chain of sequence is full of chance occurrences and contradictions.

Another mode of classification, however, is available. Some of the symptoms have an unambiguous meaning, while the nature of others is open to considerable uncertainty. It is particularly to the first of these classes that I wish to direct your attention.

Affections of mucous membranes conterminous with the skin are not uncommon in new-born infants. In most of the eruptions classified together under the name, more convenient than scientific, of glanders [*gourmes*] there are often lesions of the mucous surfaces which are accessible to sight: but this can only occur when there is a very confluent state of the exanthematous eruption. It begins in the skin, whence it spreads. In syphilitic infants, the mucous membranes may be, and really are, affected, although the eruption be little apparent, not seated in their vicinity, nor even externally manifested.

Coryza is one of the signs which appear earliest, and also one of those which have been best studied. The infant breathes with increasing difficulty by the nostrils: through the insufficiency of nasal respiration, it is embarrassed in sucking. Up to this point, there is nothing special to distinguish the specific from the other forms of coryza.

Soon, there is a running from the nose, and a few drops of blood exude, but there is no true epistaxis. The secretion becomes more and more sanguinolent, without being profuse: it irritates the alæ of the nose and the upper lip, causing ulcerations which become covered with crusts where dried by the external air. On making a more attentive examination, there will often be found at the angles of the alæ of the nose small ulcerated fissures, already characteristic, inasmuch as they exactly reproduce the special aspect of the fissures seen in the commissures of the lips.

At a more advanced stage of the disease, the bones lose their

support, the cartilages become eroded, without being perforated, the nose flattens, and gets a squashed appearance. The upper part, little prominent in infants, spreads out, giving a strange effect to the face. The lesions, however, do not generally proceed to this extreme degree: the progress of the structural change generally stops at its second stage: sometimes, it progresses by fits and starts, just as chronic eruptions alternately augment and diminish. The opportunities after death are only too frequent of ascertaining the true nature, and different degrees of the lesions of the nasal mucous membrane. Coryza is, almost in every case, the earliest sign of infantile syphilis.

The mucous membrane of the lips and mouth is, perhaps, less frequently attacked than that of the nose; but to compensate for this the symptoms are more obvious. We find at the orifice of the mouth, fissures, in more or less proximity to one another, radiating in the course of the natural folds of the integuments; and also rounded ulcerations, true *mucous crusts*, having the same seat, though not exactly the same aspect as in the adult. The striæ have a characteristic appearance, and are such as I have never seen except in syphilis: in proportion as their situation is distant from the labial mucous membrane, so is their size smaller. At their bottom, they have an appearance which is more or less bright red, bleeding, and gristly: their edges are finely fringed, and blackened by adhering coagulated blood. Tenacious, like all fissures which occupy constantly elastic parts, they often leave indelible cicatrices after recovery. I have seen both young men and young women at the age of puberty who still had these cicatrices, stigmata, the nature of which they did not suspect.

The mucous crusts are hardly ever met with except at the commissure of the lips. They are small, thick, protruding, whitish, and have, at first sight, a diphtheritic appearance. They seldom invade the cheek. Originating within a fissure, and becoming developed consequent upon an irritation irrespective of syphilis, there do not exist the same reasons for their occurring within the mouth as in adults.

The *mucous membrane of the pharynx* ought to be carefully examined, though, very often, it is not affected. By never omitting in any case, to inspect the back part of the pharynx, you will find, more frequently than the statements of authors would lead you to suppose, mucous plates occupying the anterior or posterior pillars,

but never the posterior wall of the pharynx. On the pharynx, their appearance is not the same as at the angle of the lips: they protrude little, are very superficial, and having no exudation on the surface, are not liable to be mistaken for diphtheritic patches.

In every case in which it is possible to suppose that the infection was received from the nipple of the nurse, importance has naturally been attached to the state of the nursling's mouth and lips. An impression has existed, that the localisation of the symptoms, or at least their predominance at the points of contagion, must furnish valuable information. I cannot too strongly warn you against the danger of being swayed by that notion; for although you may derive advantageous indications, you may also be led into the most regrettable mistakes by giving way to the belief in question. By an exactly similar tendency, it has often been concluded, from the concentration of lesions around the genital organs, without any other evidence, that young children have received venereal inoculation in shameful assaults. The infection of the nursling by the nurse may take place by a single erosion; and it is not maintained that the disease has numerous centres of origin because the inoculated lesions belong to the secondary period. It is only too certain that a single chancre is sufficient to admit pox into the system, just as a labial ulceration may suffice to do the same. Many children affected with hereditary syphilis have had one or more mucous patches on the lips; but what conclusion are we to draw from the fact that one or several mucous tubercles are seated at the buccal orifice?

Particularly bear in mind—and the fact is one of which I should not speak were it not often forgotten—bear in mind, that in the case of the infant, no more than in the case of the adult, does the number of secondary lesions in any particular part imply that the infection has entered by that part. The anatomical disposition of the anal orifice is similar to that of the mouth; and, consequently, you will find the same lesions as in the mouth—fissures, rhagades, oozings, and consecutive ulcerations; but I ought to mention that the affections are generally less extensive and less severe around the anus.

There are other parts where the infant's skin seems to resemble, in its structure, the mucous surfaces, and where, when under a pathological influence, it nearly assumes their characters. I refer to those folds in the integument, so deep in fat children, which become ulcerated, or at least irritated by rubbing, and yet more by the infiltration of excremential fluids, and which so specially demand pre-

cautions as to cleanliness: in these situations, fissures and ulcerations are often produced. It is prudent to beware of being misled by the deceitful appearance of simple ulcers; and it is on the hands and feet that these lesions are characteristic. I shall consider them in relation to cutaneous eruptions.

I have passed in review the venereal alterations of the mucous membranes: I have assigned them the first place, because they are more expressive, and particularly because they clear up the diagnosis by their frequency, their specialities, and their importance in relation to inoculation. The constitution of women has often been compared to that of children: I cannot venture to say to what extent this comparison is valid, but here it is justifiable to some small extent. In women, as in recently born infants, the mucous membranes are, much more frequently than in men, the chosen seat of syphilitic lesions. Suffice it to remind you of the remarkable frequency of syphilitic sore throat in women.

Among the *cutaneous eruptions* properly so called, *roseola* is generally the first to show itself: it is also very frequently the first to appear in recently born children. More or less generalised, occupying by preference the inferior extremities, not seen frequently on the face, it manifests itself by spots varied in form, extent, and colour. The exanthem appears and disappears rapidly: so rapid indeed is the disappearance, that before the physician arrives, it often happens that the eruption is gone.

Subsequently, *different eruptions* appear, among which are the many forms, to describe which dermatologists have exhausted the systems of classification. Take a syphilitic infant: examine in it each kind of exanthem, the well-defined pustule, papule, vesicle, &c., consider the aggregate of the eruption, and you will be struck with the very special aspect of some of the eruptive lesions which solicit your attention, and will decide the diagnosis. That which makes the description given in books of venereal exanthemata so delicate and sometimes so subtile, is the desire of authors to find in each form a distinctive character. Clinically, we have a right to substitute the real fact for this dogmatism: given, a syphilitic eruption, let us put aside the non-distinctive lesions, and restrict our inquiry to the best marked lesions.

The cutaneous affections which may almost be entitled pathognomonic are those upon which alone it seems to me of any use to insist: of these, the *mucous patches* occupy the first rank, after which

come *squamous affections* and *ulcerations*, which represent the second phase of the evolution of different elementary alterations, and the colour of the skin.

The mucous patch, as you know, is one of the manifestations of syphilis which is most frequently observed; and yet it is one regarding the value of which fixed views are still far from having been attained. So common is it in women, that in them, there is scarcely a case of constitutional syphilis exempt from it; and in infantile syphilis, it is not less frequent. I have shown you mucous patches upon the cutaneous margins of mucous membranes:—you will likewise find them on the skin, in the vicinity of the anus, in the inguinal folds, on the haunches, and even on the trunk. Their form of development varies with their situation. They are quickly curable, when situated where they are free from being chafed; but they accumulate and thrive (if I may be allowed the expression) wherever there exists both rubbing and exudation.

It is as difficult to describe the mucous patch in the infant as in the adult; and I really cannot depict it without recalling its appearance to your recollection. Let me simply say that in early infancy mucous patches have a more spongy and less indurated base, that the bottom of the lesion is more generally moist, and the oozing more abundant: and since, from want of an exact definition, I invoke your memory, I cannot do better than compare them to those met with in the labia minora and on the internal surface of the labia majora.

The mucous tubercle would of itself be sufficient in the recently born infant to decide the question of syphilis:—but then how numerous are the causes of uncertainty and error! How many non-specific eruptions affect a very similar form under the influence of rubbing, moisture, and contact with irritating substances! The diversity of names given to this lesion tells very clearly the diversity of appearances which it presents.

I am anxious to try to describe to you the special ulcerations of the skin, buttocks, and thighs, which you have had so good an opportunity of observing during the last few days in a little child in bed 17 of our nursery ward.

I pointed out to you these *serpiginous ulcerations of the skin*, exactly resembling the traces left in wood by xylophagous insects. These ulcerations, which frequently do not exceed two millimeters in breadth, have so decidedly special an aspect, that I regard their

presence as one of the most pathognomonic signs. After they are healed, moreover, they leave linear cicatrices, at first red, then white, which by their form distinctly remind us of their origin.

In the infant, *false psoriasis* occupies the palm of the hand and the sole of the foot. The skin, at first wrinkled, seems to grow thicker; the epidermis, less elastic than natural, cracks at the digital intersections, and wherever movements subject it to extension. Soon, some patches of epidermis are detached, and the surfaces which they leave denuded become covered with new epidermis, which is so thin that it is no stretch of language to compare it to the outer skin of an onion. The feet and hands thus denuded, assume a livid, occasionally copper colour, but present nothing else which is characteristic. The inexperienced physician might easily be led into error, were he to rely on descriptions necessarily insufficient, as he might confound lesions of syphilitic origin with stripping of the epidermis in the recently born infant, an occurrence depending upon wholly different causes.

As the mucous patch originates and developes itself upon various cutaneous eruptions, after the manner of a parasitical growth, vesicular and pustular eruptions may produce specific ulcerations. Whether the eruption does or does not assist in the transformation, it certainly has to do with it: every venereal ulceration in children has an eruption as the basis of its development. The pustule, in place of cicatrizing, spreads out, and burrows: its diameter increases, its edges become elevated, and phenomena are observed similar to those seen in certain cases of smallpox at a stage when the pustules ulcerate, in place of becoming more or less covered with crusts. Engendered in this way, the syphilitic ulcers of children are met with in every situation in which products of the eruption can exist: they have, however, a preference for the buttocks, the lower part of the abdomen, and the cutaneous folds in the vicinity of the genital parts.

I have striven, Gentlemen, to indicate salient features to you, without dwelling upon them. I wish you to realise the imperfection of my sketch, and to feel the necessity of your completing it by your own personal observation: this necessity becomes specially apparent to me when I proceed to direct your attention to the *peculiar hue of the face.*

It not unfrequently happens that the physician, taught by long familiarity with this appearance, will almost at once diagnose syphilis

after having simply seen the child's face, although the peculiar hue can be described but vaguely in words. The visage presents a special shade of bistre: it looks as if it had been lightly smeared with coffee grounds, or a very dilute aqueous solution of soot. There is neither the pallor, the icteric hue, nor the straw yellow tinge of skin seen in other cahectic affections; the tinge is not nearly so deep, but is almost like that of the countenance of a recently delivered woman, and either does not extend at all, or only partially, to the rest of the body. I know no disease except syphilis in which a child's skin has this peculiar colour: and consequently, when it is well marked, it has more diagnostic value than any other symptom.

The child's little suffering face presents some characteristics besides the bistre colour.

The eyebrows have either not been developed, or have fallen out: the eyelashes are often everted: at the external angle of the eye, we sometimes find fissures like those seen on the lips and at the opening of the nares.

In place of eyebrows, from which the hair has fallen, there are seen two yellow, bistre-coloured stains, and a considerable amount of desquamation; and these same bistre-coloured stains, which in fact are patches of psoriasis, are most abundant on the chin and round the mouth.

I have been obliged in my description to decompose the syphilitic eruption, taking separately its surest manifestations; and it would be useless in me to attempt to re-establish it completely. The forms of infantile syphilis are grouped together so differently, they vary so much individually, in extent, in progress, and in tendency to transformation, that it is necessary to be guarded in forming an opinion, necessary to watch events, and to distrust rules applicable only to particular cases.

Were syphilis in the adult the subject before us, I might now proceed to speak of treatment, and so complete the history of the disease. But we have at present to do with syphilis in early infancy; and to describe the cutaneous manifestations of syphilis is to indicate a part only of its manifestations, those which are the most important in respect of diagnosis, and which enable us to give a name to the affection; but the least important perhaps for the clinical physician, whose desire is not only to give a name to the disease, but also to be able to foresee its ulterior evolution.

Syphilitic infants are, from the very first, under the influence of a *cahexia*, which adults do not always escape, but which in them is far from occurring so constantly or presenting so much gravity. In proportion to the greater or less severity of the symptoms, will be the greater or less chances of life or death; and all the signs which intimate the imminence or danger of a disturbance of the general health will acquire the greatest possible value. When called in to an infant said to be affected by syphilis, hesitate to indorse the opinion, and be physicians: watch the most insignificant disorders, the slightest functional disturbances, and do not look upon the state of the skin as the sole means of estimating amelioration or aggravation in the state of the patient, as you ought to be able almost authoritatively to do in older subjects.

The cahectic physiognomy of the syphilitic infant has been described in a very exaggerated manner; but the disorder is not the less deep-seated, that it is the less visible. When a robust well-formed infant has brought with it into the world a sufficient reserve stock of vigour to traverse this period of severe trial, it becomes weak and dejected, loses flesh a little, and is rather puffy, and presents a pallor of seemingly œdematous character; while, at the same time, the integrity of the functions is preserved. The infant is in the same condition as the adult under the influence of the same cahexia: in proportion to the operation of the treatment, the amelioration of the general state becomes apparent. The little patient being no longer irritated by its sores, or by the contact of the excreta with the ulcerated surfaces, sleeps better, and is forthwith benefited by the tranquility of its slumber. The complexion loses the bistre hue: the physiognomy becomes more lively and cheerful. Should this happy change take place during the early weeks of treatment, an entirely favourable result may be hoped for.

Unfortunately, however, the course of events is not always so propitious. The syphilitic infant is seen to grow thin, and to suck with less avidity, symptoms arising from diminished appetite and embarrassment caused by persistence of the coryza. The sleep is short and disturbed. Digestion is imperfectly performed: vomiting is not a usual symptom: diarrhœa is of frequent occurrence, and is of an inveterate, often sanguinolent character, the large intestine specially participating in the infection. Respiration is inadequate; and the more important functions being thus implicated, no longer assist in accomplishing the urgently required reparation.

The cahectic condition sometimes exists to such an extreme degree, that the termination of the case is more disastrous than there seemed reason to anticipate: an excessively weak infant left in a state seemingly serious rather than alarming, has died simply from syncope.

Infantile syphilitic cahexia, presents a twofold study: on the one hand, we have to consider the degree of severity in which the syphilis exists, and on the other, the presence in subjects so young of all the causes of exhaustion, which are called inanition, diarrhœa, intermittent fever, or pox.

The autopsy may often disclose nothing to which death can be directly attributed, but may reveal lesions on which depend slow, profound disturbances of the economy. To this category belong the alterations of the liver studied by Gubler; peritonitis in the fœtus described by J. Y. Simpson (an affection from which young infants are not exempt); certain pulmonary lesions, as yet imperfectly known; and organic alterations of different organs presenting no appreciable specific character.

Gentlemen, having spoken at some length upon the symptoms of infantile syphilis, and their subordination, I now come to consider the origin of the manifestations of which I have given you a sketch. It is nearly twenty years since I first tried to explain the *pathogenesis* of infantile syphilis. I was guided then, as I now am, solely by experience, uninfluenced by any doctrinal bias. Among the facts which I have observed, and specially among the conclusions which these cases seemed to warrant, some were looked upon as rash hypotheses, and others as enormities. These views which excited so much opposition when originally announced in clinical lectures at the Hôpital Necker have now become classical, so that in place of having to defend, it is sufficient for me to state them.

At the period to which I refer, a generalisation, captivating from its exclusiveness, had reduced the transmission of syphilis to the simplest possible formula. Chancre produced chancre, in virtue of a law so absolute, that from the first moment that syphilis appeared, its presence might be affirmed, although its origin was shrouded in obscurity similar to that which envelopes the beginning of everything. Original inoculation was alleged to be the only means of infection; and you know how many ingenious combinations, how many learned essays on human morality, how many clever anecdotes served to fill up the gaps, and give reasonableness to the theory.

The infant might escape the depravity of an inventive libertinism, but neither relations nor nurses enjoyed a like immunity. The infant being in contact with infected individuals, the object of caresses more imprudent than blameworthy, it became the innocent victim of the most unforeseen inoculations. We see the adult elude investigations undertaken in his own interest; but how much more reason is there for even the best conducted inquiries to fail to disclose the mysteries of the transmission of syphilis in the recently born infant. The intelligent scepticism which reaches incredulity through a course of sagacious observation, which destroys belief by ridiculing credulity, always possesses witty aspects of which experimental truth is deprived. Where is the physician who has not regretted having been too credulous, and who among us has not experienced a feeling of honest self-approval in having detected fraudulent representations? To show—what was only too certain—that syphilis was largely used as the means of deceit and lying was a service for which we ought to be grateful.

Facts, at last, became so numerous and so decisive, that criticism was crushed by demonstration. The progress of the truth was gradual; and the movement has not yet attained its full extent. Rules, at first rejected as erroneous, did not afterwards admit of being discussed; and in relation to certain points, it may be said, that in respect of the generation of infantile syphilis, scientific knowledge is complete.

Had we only succeeded in establishing on a solid basis the pathology of syphilis in early infancy, the gain to science would have been very precious. The study of the venereal disease in children had the advantage of suggesting doubts as to the strict accuracy of prevailing theories, and of inducing physicians to subject them to clinical revision. Then began researches into the transmission of secondary symptoms, which opened up an entirely new path of inquiry, which made it seem less impossible for their transmission to take place from adult to adult, by proving that it did take place from infants to adults, and from adults to infants. As, however, I have restricted myself for the present to the consideration of syphilis in infants, I must now return within the limits of my subject.

A syphilitic mother may give birth to an infant carrying the germ of her disease: that is the first, and the least disputable fact. It is a second, and not less positive law, that a syphilitic mother may

produce a child free from syphilis. In respect of both laws, syphilis follows the law applicable to all hereditary affections.

Is maternal syphilis transmissible by the mother, only when she had the disease prior to conception? Or, may pox, contracted by the mother during pregnancy, be transmitted by her to the fœtus?

This is an important and difficult question: do not attempt to solve it by the simple rules of common sense, which all agree cannot solve any medical problem. It has been thought most probable, that when syphilis is derived from the mother, it must have existed in her before conception, it being no doubt, more natural to suppose infection of the ovule than of the fœtus. Cases, too, in which syphilis contracted by the mother during the latter months of pregnancy have not contaminated the infant have also seemed to lessen the probability of infection after fecundation. Finally, there has been an unwillingness, through fear of consequences, to admit that the blood of the fœtus can be vitiated by its mother's blood. Were that admitted, how could it be denied that syphilis may be communicated to the infant by lactation, and in other ways still more hypothetical?

I am never afraid of the consequences of a positively ascertained fact. It is quite true that a mother infected before conception may give birth to a syphilitic infant: it is also true, that a mother infected during pregnancy may infect the fœtus which she carries in her womb; and of this latter truth you had an example in bed 24 of our nursery ward. Between the two classes of cases, however, important distinctions have been rightly established, and ought to be maintained.

The more thoroughly we examine the simplest laws of the pathogenesis of syphilis, the more do we find that possibilities multiply, and that *casuistry*, if I may use the word, becomes increasingly subtle.

For how long a period is maternal syphilis susceptible of transmission? Does it exist during the primitive, or during the secondary symptoms? Does it exist in the tertiary period? May it still be present after an indefinite period has elapsed since the last manifestations of the disease? Again, supposing that the infection is possible at any date, which period is the most favourable for its transmission?

Unfortunately, I cannot answer all these questions. I do know, however, that the mother may conceive a syphilitic infant, at a time

when she herself seemed exempt from the disease which had left no traces. I believe that the period most favourable to transmission is that which succeeds the first phase of the secondary symptoms. I also know that the mercurial treatment, against which they begin to speak, when properly carried out, nullifies syphilis in the woman, even though, as is asserted, it do not cure it; so that she, after having conceived a succession of syphilitic children, is treated by mercury, and then produces uncontaminated offspring.

It may perhaps appear strange to you that I thus circumstantially announce a self-evident proposition: but I insist upon it, because syphilographers have not sufficiently taken into account a fact of which they were not ignorant: being engrossed with the treatment, they have almost forgotten the subject of pathogenesis. I leave for your own reflections this very elementary idea, which you will see is not devoid of importance.

At what period of pregnancy is syphilis, contracted after conception, transmissible? This we do not know: but there is rightly a disposition to believe, that the nearer the date of infection is to the commencement of pregnancy, the greater is the probability of the fœtus becoming contaminated. Does this depend upon the disease of the mother having a duration relatively longer than when she is infected at an earlier state of gestation? This question, I cannot answer; and indeed I do not feel myself sufficiently certain as to the fact itself to offer an explanation.

We have been supposing a case in which the mother only is syphilitic; but let us suppose a parallel case, in which the father alone is infected. This is a less complicated problem, inasmuch as the paternal influence must be contemporaneous with fecundation; but then again, it is obscure in respect of the evidence of paternity.

For my part, I do not hesitate to declare (and I have long held this opinion), that *syphilis is transmitted from father to child* when the mother is not infected: I also recognise as fully as any one the difficulties attending a decisive investigation, and would remark that the practice of medicine does not encourage obstinate illusions. But some reservations which a knowledge of the world exacts, certain cases impose, of which I am convinced by having seen enough of such cases: and you, Gentlemen, will meet with them in sufficient number to share with me this conviction.

Here, again, the question presents itself in terms similar to those in which we asked it in respect of the mother:—At what stage of its

evolution is paternal syphilis transmissible? The answer is the same—with this difference, however, that the opportunities being more numerous, and it being more easy to be well informed as to the syphilitic symptoms of the man, in respect of their progress, date, and phenomena, we may perhaps find more precise elements for arriving at a decision.

An infected woman has a thousand reasons for concealing the nature of her malady: besides, she often does not know whether or how she has contracted it; and as she has ignorance for an excuse, she generally escapes continuous observation. In the man, there can hardly be offered any pretext for ignorance. He has no reason for concealment; and, thank God, you will meet with more men who are anxious than men careless as to the future. Observe, I make this remark only in respect of venereal affections.

You will find that you are often consulted on this subject by men, but never by women, about to be married. You will be told the exact date of infection, the symptoms which supervened, the treatment which was prescribed and followed: every facility will be afforded you for verifying the statements made, and you will be solicited to do so: no information will be withheld from you. Yet, how many uncertainties, and legitimate grounds of hesitation in forming your opinion!

It is unnecessary to say that a man who is syphilitic ought to abstain from procreation. But the question is:—To what extent is there absolute security, when a long period has elapsed since the disappearance of the disease?

I have often mentioned to you the case of a physician who consulted me: he had been cured of syphilis, married, and became the father of a syphilitic child. I have cited the case, because it presented every condition required to constitute such a demonstration as science demands; and because it came under my notice at a time when professional opinion was still undecided. Since I met with that case, how often have I seen similar conditions lead to similar consequences! How often, also, let me add, have I seen fathers properly cured of syphilis by the classical medication, engender children exempt from any trace of the disease.

The hereditary character of syphilis, as of all other diseases, is liable to so many exceptions, that it is necessary to guard ourselves against the undue influence of preconceived opinions; and to bear in mind, that while, in respect of hereditary transmission, there is

everything to fear, there may be, occasionally, everything to hope for. It sometimes happens, that under the most unfavourable conditions, both father and mother being affected with pox in the most palpable manner, everything consequently conspiring against the health of the fœtus, it nevertheless comes into the world free from the disease. But on the other hand, the symptoms of syphilis in one parent having yielded to rational treatment, we conclude, after mature deliberation, that all is safe; but nevertheless, the child is born infected, and dies of syphilis.

Hereditary infection is not the only risk which infants are exposed to from syphilis. The infant, in its *constant contact with the nurse*, or with other women who bestow on it those little services without which it could not live, often incur the hazard of contracting syphilis in a very easy manner by *direct inoculation*. I am not now speaking of the risk of inoculation in the genital passages, that being a matter on which it is quite unnecessary to insist, though some ability has been shown in using it as an argument in favour of certain theories. A child *directly inoculated* by the nurse or otherwise, becomes of course a cause of danger to all those about it, being as able to transmit, as it has been to receive infection.

Gentlemen, if, going back in thought some years, I fancy myself explaining to my students, at the Hôpital Necker, the laws which preside over the *post partum* infection of the recently born infant, I am able to estimate without any difficulty the advance which science has accomplished since that time. Then, I had to discuss denials, contend against pressing objections, accumulate proofs, collect cases, and give to my hearers a review of these cases with the fullest details, or submit the patients themselves to the sceptical criticism of my class. Now, facts having spoken, principles are sufficiently firmly established to require merely to be stated. I shall, therefore, be brief, as I ought to be, when dealing with unassailable doctrines.

The nurse may transmit to the infant the primary taint by which she was affected. This has never been denied. *She may also inoculate it with secondary symptoms;* and although the possibility of transmission in this way was long contested, this mode of transmission is much more frequent, and not less satisfactorily established than the former. Here too, there is reciprocity, as in the former case—the nurse may be the victim of the nursling affected with hereditary syphilis.

It is a great matter to affirm this law: but this affirmation is not

enough to dispel all the doubts which will present themselves to you in practice. The nursling, like the nurse, is liable to a double inoculation: it may be infected after birth, or it may bear the insidious germ of a disease destined to break out at the end of some months. *The nurse may be inoculated in coitu, or by the contagium of the recently born infant.* Have we the means of recognising each of these occurrences with certainty, or of estimating their relative probability?

It would be superfluous in me to impress upon you the importance of this inquiry, the momentous gravity of which you can understand, even when it does not assume the form of a judicial inquiry. In cases of this kind, the physician exercises a judicial duty which is paramount to every other: his responsibility is enormous in the eyes of the world; but for himself, it will be enough to realise that responsibility in his own conscience.

The more I feel the magnitude of the responsibility of giving a decision in cases involving these questions, the more do I desire to be able to fortify your judgments by giving you precise data.

Unfortunately, I cannot furnish you with absolute signs; but obedient to the demands of a duty which I believe to be imperative, I shall endeavour to prevent your being misled by perilous assertions. Every case will come before you surrounded by complex circumstances, and you will have to disentangle each particular truth, without generalising the results of your examination. Do not be astonished at this seeming impotence of science: accept it as a necessity with which your daily practice will make you familiar. Medical laws are to the physician what the legislative code is to the magistrate: without them, deviations from the right road would be incessant: but guided only by them, individual problems cannot be solved; for being a lawyer never sufficed to make a man an able acute sifter of evidence and examiner of witnesses.

The nurse who has transmitted syphilis to, or received it from the nursling, may be in similar if not in identical conditions. It seldom happens that you are consulted at the first occurrence of the untoward symptoms; more or less time has elapsed since inoculation, so that you have to gather the history of past events from recitals in which ignorance contends with deceit. It has been said that the infection is communicated more frequently by the mouth than by the womb: but how numerous are the exceptions to this pretended rule! Supposing that the original centre of contagion was in the situation

where the infant most frequently came in contact with the nurse, and supposing also that the infant was suckled, how incalculable the opportunities of its disseminating the evil! You see vaccinated infants inoculate themselves with vaccine matter from the arm on all parts of the body much better withdrawn from their attempts: you also see the pus of a primary ulceration carried to the genital organs, to the belly, and to every situation to which the nurse herself carries her incessant intervention.

If the question be as to primary symptoms, which are almost limitable in duration, limits may be indicated; but we do not know at what period secondary symptoms have ceased to be inoculable. Even a nurse, like all other women, escapes from inquiries which in the case of a man would yield valuable information. In women, the ulcerations consecutive to chancres cicatrize without leaving visible traces, the induration of the edges is not so prominent, and the glands are less affected: the chancre may have its seat on the womb, or may be concealed in some situation unsuspected by the physician, however well acquainted he may be with the divagations of debauchery.

Theoretically considered, the solution of the question is beset with doubts: in actual practice, however, it is simplified; for by considering very subordinate circumstances in connection with each other, by analysing statements, and discussing their contradictions, we are enabled to base conclusions upon plain solid reasons.

In cases of this description, as in all medico-legal consultations, the possession of knowledge is the important element. Acquire a profound acquaintance with infantile syphilis: study thoroughly the evolution of syphilis in the woman, and having thus made yourselves strong by the possession of knowledge, you will be in a position to grapple with the difficulties of each inquiry. To express the fact in better terms—you will be able to use difficulties themselves as means of discovering truth.

There is still another mode of inoculation, which, while it is very much like that of which I have been speaking is in some respects distinct from it: I refer to the *transmission of the syphilitic virus by vaccination*. This possible means of transmission, at first denied by deservedly esteemed syphilographers, seems to me to be firmly established by conclusive experiments. In 1861, you saw in our service a very sad example of this mode of transmission; and the facts, so testing, of what may be called the epidemic of Rivalta, will

satisfy any physician as to the correctness of this view provided his mind be not previously influenced by an opposite bias.

It would be out of place, here to refer to the extended discussions which arose out of the law-case of Dr. Hubner of Bambey, which, since 1854, has originated so many contradictory allegations. Since that date, other cases of the same kind have been cited; but it would lead me far beyond the limits of my teaching in this place, to discuss or even describe rare cases, which I know to be exceptional and the subjects of criticism; while at the same time, it would be absurd in me to consign them to the limbo of apocryphal pathogeny. I have already, moreover, sufficiently noticed them in my lectures on vaccination.[1]

There still remains for consideration another question relative to the transmission of congenital syphilis. Suppose a child engendered by a father who had had the pox, but who no longer showed symptoms transmissible by inoculation:—*Could this syphilitic child when in utero infect its mother?* You can estimate, Gentlemen, the number of difficulties which surround such a problem: you can see how many elements will be wanting for its solution, because it may be asked, whether the woman supposed to be infected by her fœtus had not been previously the subject of syphilis which had passed without recognition. Be that as it may, the transmission of syphilis from the father to the mother, through the medium of the fœtus, is now admitted to occur.

The fact admits of an easy physiological explanation. It is indeed certain that the mother by mingling her blood with that of her infected fœtus becomes infected with syphilis. Is it at all improbable that a fœtus the blood of which is syphilitic should infect the blood of its mother? It is about the third month that the circulation of the fœtus becomes active. By the umbilical vein, it receives the blood of its mother, and it returns to her by the umbilical arteries that which has traversed its organs, and which is a mixture of its own with the maternal blood. You know, without my impressing upon you the fact, that in the fœtus the blood and the blood-vessels are formed almost simultaneously. The fœtus, therefore, has blood which is peculiarly its own, and if the fœtus is syphilitic by its father, its blood is syphilitic in virtue of the same title as the other parts of its organism. Consequently, it can infect

[1] Volume II, p. 124.

its mother through the medium of its blood, just as the syphilitic mother can infect the fœtus in her womb.

A reliable observer has communicated to me the following case, which is in accordance with physiological facts:—A young lady of unquestionable morality became pregnant within a few days after her marriage. Her husband, a physician, had had syphilis three years previously, and had no remaining trace of the disease, except slight engorgement of the cervical glands. The lady, at the third month of her pregnancy, felt an itching in the labia majora; afterwards, it was found that there existed pretty extensive ulcerations in process of transformation into mucous crusts. Some days later, they were perfectly formed: there was also sore throat and engorgement of the cervical glands. At the eighth month, the lady was delivered of a miserable child, which became affected with syphilitic coryza and ophthalmia on the tenth day after birth; and which died, when six weeks old, with fatty liver, ascites, and œdematous extremities. The day before its death, epistaxis occurred.

The most disputable fact in this case is the appearance of ulcerations on the external genital organs, ulcerations which may be attributed to direct contagion. But it must be remembered that they were mucous crusts, and not true chancres; and the development of mucous crusts in these parts, which are during pregnancy the seat of great erethism, appears to me to be a phenomenon in all respects analogous to the formation of vegetations and crista galli on the surface of the vulva in some non-pregnant women. The exuberant vitality of these organs during pregnancy is the starting point of the morbid manifestations.

Perhaps I have dilated too much upon the manifestations of syphilis in infants, upon the possible and probable forms of inoculation and upon its hereditary genesis. I have omitted all historical notices of the subject, feeling that as I could not do justice to all the observers who have so powerfully contributed to the elucidation of the disease, I ought to abstain from quoting any of them.

I have still to speak of the *treatment* of syphilis in infants. Though the subject is most important, it is both possible and useful, I think, to discuss it with brevity.

Whatever may be the age of the patient, syphilis must be treated in accordance with the same principles. The remedies to be employed are the same; and the end to be attained, as well as the

means of attaining it, are also the same. Keep steadily in view this simple and fundamental truth. Were it allowable to employ in infants the classical preparations so easily administered to adults, the problem would be solved, or rather there would be no problem to solve. The difficulty does not arise from indications, but from counter-indications and obstacles presented by the infantile constitution to the tolerance of medicines.

I have spoken to you of the influence which syphilis, when left to itself, exercises upon the general health of the infant. I have shown you the increasing cahexia exhibiting itself in functional disturbances, and particularly in an altered state of the digestive function. These are the points to which your attention ought to be unceasingly directed: it is by the state of the stomach and intestines that you are guided as to the increase or diminution of the doses of medicines, and the suspension of a remedy.

Mercury ought to be the basis of your treatment. I neither ignore the renewed objections to the mercurial treatment, nor the inconveniences which attach to its employment: I am aware that by a sort of periodical reaction, there have been on different occasions attempts to combat and dethrone it, but I also know that these attempts have only had their day, and that mercury after being strongly denounced, has always been reinstated in favour by the force of circumstances. In the recently born infant, the employment of succedanea is impracticable: depuratives of the best repute are out of court simply because it would be utterly impossible to make use of them.

Of the preparations of mercury used internally, after numerous trials by myself and pupils, I continue to prefer the solution of corrosive sublimate so well known as the *liqueur de Van Swieten*. I give it to the extent of one or at most two grammes a day in milk: so administered, the infant takes it without repugnance. Nevertheless, though the administration of the perchloride of mercury be easy, it very often happens that one is obliged to renounce its use on account of the diarrhœa which it keeps up or causes. In such cases, it is best temporarily to desist from all mercurials, because, under the circumstances, not one of them can be used with impunity, all of them favouring the troublesome tendency which it is essential to combat.

It was proposed to give calomel in very small doses, particularly at the time when it was hoped that by combining it with chlorate of

potash, we should be able to avert salivation in the adult and diarrhœa in the infant. I am not sufficiently well informed in relation to the advantages of this method of treatment to recommend you to adopt it; but I may say, that I am inclined to believe that the addition of the chlorate of potash would, at least for adults, lessen the anti-syphilitic action of the perchloride of mercury.

The protoioduret of mercury does not seem to me to possess any advantages; and I do not think that at present it possesses many advocates.

With the laudable purpose of averting threatened disturbances of the digestive function, or preventing their imminence, it has been recommended not to give any medicines internally, and trust entirely to mercurial frictions. Although this method reckons among its supporters many respectable physicians, I reject it, as one which (besides other inconveniences) leads to gastro-intestinal symptoms. The skin of the infant receives mercurial applications badly, for they are always irritating, a preventive to their being absorbed. The external use of mercurials, still much in vogue in England, Germany, and in all the north of Europe, is only exceptionally employed in France, even in the treatment of syphilis in adults.

As a general rule, we ought not to break the skin of the young infant. Even when the infant's skin is healthy, it has not a sufficiently active vitality to furnish a therapeutical leverage of much value: when diseased, it acquires a very baneful influence, for which reason you ought always to endeavour to cure local lesions of the skin: to eradicate them is to render a signal service to the little patient. Is every ulcerative centre which you allow to become developed, or of which you follow the evolution a source of general infection? I would not dare to say it, but I know from experience that the general health of the child resents injury of its skin. Whether it be that the little wounds of the skin cause an irritation which agitates the new-born infant, whether it be the greater or less exhaustion caused by every pathological process of ulceration, whether it be that the contact of irritating matters becomes a source of pain, it is a fact, that the syphilitic child always improves, and that the diseased state of the skin is often ameliorated.

You will have occasion, according to circumstances, to have recourse to the most varied topical applications to the skin, to caustics more or less diluted, and to emollients, the use of which, however, is very limited; but of all remedies I know none com-

parable to baths and lotions of corrosive sublimate. Perchloride of mercury dissolved in water by the aid of alcohol or chlorohydrate of ammonia has the very great advantage of being easily used in whatever doses circumstances demand, ranging from the slightly caustic lotion to the bath so weak as not to cause any appreciable sensation. For a child's bath, I never use more than a gramme of sublimate.

The infant has almost as much tolerance as the adult for this medicine: it would, therefore, be bad practice to reduce the strength of the solution to that which the formularies almost invariably prescribe.

In curing the morbid condition of the skin—which is possible even when we do not cure the syphilis itself—you have the advantage of leaving it available as the medium of a medication which may yield you great success. The debilitated cahectic infant may at any given moment be unable to repair its lost strength: tonic baths, sulphurous baths, afford resources which tonics given internally do not confer; but then, unless the skin be sound, you cannot resort to this kind of treatment.

In treating infantile syphilis, *diet* takes the first place as an adjuvant, if not as a medicament. Lay it down as a rule that the infant which is not suckled, or is badly suckled, has a hundred chances against one as compared to the infant fully nourished from the breast: unfortunately, the limits within which you can interfere in this matter are very narrow. Should the mother be unable to supply a sufficiency of milk from her breast, it is a serious responsibility to confide so dangerous a nursling to a nurse. You are, in fact, compelled to be satisfied with a nurse who is nearly suitable, with whose insufficiency you are acquainted. In the matter of infantile nourishment, there is nothing more compromising than half-measures.

It is even more essential that the infant be suckled by its mother, as internal treatment applied to her will sometimes have so powerful an influence as to cure both. In the infant, the iodide of potassium is almost never applicable, but it is often useful to the nurse and through her to the nursling; but in her also, the liquor of Van Swieten ought to be specially recommended.

I cannot too urgently impress upon you the necessity of adopting the most diligent hygienical precautions. Spare the infant from every cause of discomfort which can be known or pointed out in

advance: carefully avoid giving the child a chill, than which nothing could be worse for it. The recently born infant must be kept in a temperature which is not only equal, but is also high. You are aware of the importance which physicians of northern countries attach to the elevation of temperature in the treatment of obstinate syphilis, the patients affected with which are kept in veritable stoves. Use their example and experience for the benefit of infants affected with syphilis.

However numerous your precautions may be, with whatever solicitude you may surround the little sufferer, whatever devotion you may have found or awakened in the mother, you must be prepared to meet with many failures. In the recently born infant, syphilis is always formidable, and a disease which is apt to prove mortal. Left without treatment, it exhausts the patient by internal lesions, anæmia, and functional disturbances. It often opposes a long resistance to remedial measures: the economy has not the power to sustain the prolonged struggle, and frequently, the remedy injures on the one hand, when on the other, it proves beneficial. It may be said unhesitatingly, that congenital syphilis is nearly always mortal, if it show itself within the first fortnight after birth. The danger diminishes in proportion as it is long in manifesting itself.

In conclusion, Gentlemen, allow me to recall your attention to the reservations which I thought it necessary to make at the beginning of this lecture. The syphilis which attacks the infant raises the most delicate problems: it is one of those diseases in which experience does not enable us to jump at conclusions. We can seldom proceed with our diagnosis aided by the security of pathognomonic signs, and are obliged to rely upon the attentive discussion and comparative examination of minute circumstances. The pathogenesis encounters difficulties in practice, which belong at once to the insidious nature of the evil, and to urgent interests which bring into the field dissimulation and lying. I endeavoured to give you a sketch of the principal elements of the march, evolution, and symptoms of the disease; but my chief anxiety was to tell you again and again, that you must equally avoid an insufficiency of "*savoir*," and that excess of "*science*" which leads to the premature glorification of theories.

LECTURE LXXXII.

GOUT.

Preliminary Considerations.—The word "Gout" is much to be preferred to any of the other names which have been proposed in place of it.—Gout, acute and regular.—Premonitory phenomena.—Disturbance of Digestion: Disturbance of the Nervous System: Disturbance of the Urinary Organs.—Catarrhal, Urethral, and Ocular Affections.—Arthritis, its progress and appearances.—Acute Gout in the form of short Paroxysms which either succeed to, or run into one another.—The paroxysm may supervene under the influence of an immediate appreciable cause.

Gentlemen:—When, in compliance with the request of many of you, it became my intention to devote some clinical lectures to the history of gout, I believed that I was sufficiently acquainted with the disease to treat it in a proper manner. But when, with a view to put you in possession of the subject, I set myself to think over it—when I tried to arrange in proper order the numerous facts which had come before me in the course of my practice, and to complete the results of my own experience by the perusal of the writings of others, I perceived how far I was from being in a position to respond to your expectations. I will not, however, shrink from the task you have imposed upon me. I shall do my best to state to you my views regarding the nature and different phases of the disease; and I shall likewise point out to you what I think ought to be the general management of gouty persons.

When one has meditated upon Sydenham's Treatise on Gout, a marvellous monograph, at once concise and complete; when one has gone through the cases described by Musgrave in his work on anomalous gout—a work far too much lauded, I think, and in which gout and rheumatism are very often mistaken for one another: when one has read Scudamore's treatise on the nature of gout and rheu-

matism; when, finally (and to refer only to important works of our predecessors), one is acquainted with the Commentaries of Van Swieten and the Aphorisms of Boerhaave—one is almost able, with the aid of his personal recollections, to form some opinions regarding the disease of which I am now about to speak to you. And at present, if to put our ideas more in harmony with the existing state of knowledge, we read contemporary works—if we cast our eyes over Dr. Garrod's work, which, by the way, appears to me far inferior to its reputation—if we rummage the innumerable essays published on the subject, and among others, the excellent thesis defended before the Faculty of Paris by Dr. Galtier Boissière, we feel convinced, notwithstanding the pretensions of modern medicine, that we have made no advances, since the time of Sydenham, in our knowledge of the treatment, phenomena, and special nature of gout.

Translate the work of the English Hippocrates into what is called more scientific language, and you will not only admire the description which that great man gave of the disease, but you will be surprised to find how little he left to be said regarding it by those who came after him. Being himself tormented for many years by acute or chronic normal gout, his description is only applicable to normal gout; but that he has described in so masterly a manner as to leave almost nothing unsaid in respect of it.

With regard to anomalous gout, you will not find the materials for its history in special treatises. These materials are scattered through books which treat of gout only in a very incidental manner; and generally, you will find them concealed under names widely different from those which unmistakeably pertain to it. Thus, for example, there are many so-called metastases of rheumatism, which are nothing else than metastases of gout.

Anomalous gout, more common than is generally believed, assumes such diversified aspects: normal gout itself is so often divested of the type created for it by nosologists, that one would be deceiving himself were he to believe that he was familiar with it.

In thus pointing out to you the difficulties of the question, I confess beforehand my incompetence, and perceive the deficiencies for which I may be blamed.

To prevent any mistake as to the meaning which I attach to certain words, and to certain theoretical views which will frequently recur in the course of these lectures—to enable you to understand

what I myself understand by normal and anomalous gout—you must have clear ideas of specificity and diathesis.

Here then, we are once more brought back to the great question of specificity, upon which I every moment insist, because every moment we see it play its part at the bedside of the patient. This part, which the school of Tours, through Bretonneau, its most illustrious representative, has placed in a strong light, is no longer disputed by any one. Will any one deny that specificity intervenes in almost all affections to such an extent, that those apparently the most similar differ in reality from each other in a very marked manner—when you see it, in acute or chronic diseases, imposing on the attentive observer by constantly showing itself in the form of anatomical lesions, by invariably manifesting functional disturbance, and by the nature of its concomitant symptoms? Along with the characters possessed in common by several species of diseases, there always exist others which belong exclusively to each individual disease, and which serve to distinguish it.

The subject now before us presents a remarkable example of this. There is certainly a great analogy between gouty arthritis and rheumatismal arthritis, irrespective of the general characteristics of inflammation which they possess in common. But even in this inflammation, we can detect notable differences, if we consider its preferential seat respectively in the two diseases, its appearing accidentally in rheumatism and periodically in gout, the production of tophus as a sequel of an attack of gout and never following an attack of rheumatism; and in particular, if we consider the manner of evolution. These differences are still more evident, when we study the general symptoms which precede, accompany, or follow the local articular manifestations. In gout, these manifestations are nervous disturbances, which, if I may use the expression, are obligatory phenomena of the attack, but which are absent in rheumatism. They are of such a nature, that, with only a single articulation involved, and involved to a less degree than if several joints were invaded by rheumatism, the gouty patient does not bear up so well, and is more weighed down by his disease than the rheumatic.

In the complications, or rather in the local non-arthritic manifestations, these specific differences also exist. Thus, in gout, affections of the urinary organs supervene, which are not seen in rheumatism: and again, the heart is very often implicated in rheumatism, and seldom in gout.

In a word, Gentlemen, whether you have to do with the local or general manifestations of the disease, you will find everywhere engraven the indelible characters of specificity. When, at the first glance, we do not observe the stamp of specificity imprinted upon the more external phenomena, by careful looking, it will be found. I admit, that if I receive no explanation of the case, if all except the affected part be concealed from me—if, for example, I am only shown a joint, or the instep of a person affected with arthritis, it will often, no doubt, be difficult for me, by merely looking at it, to say, whether I have to do with gout or rheumatism. But I ask you, whether any reasons exist why more should be exacted of me than of the naturalist? Among the ablest botanists, is there one, who by merely looking at two leaves, each belonging to different plants of closely allied species, will name the species of plant from which each leaf has been taken? Before giving his opinion, he must see the fruit. Well then, to continue the comparison, I also require to see the fruit of the gout. If I find that the articular affection has been followed by tophaceous products—if the patient tell me that he has experienced symptoms characteristic of gravel—if I make myself perfectly acquainted with the mode in which the local affection was evolved—my diagnosis is made certain. It is not different in gout from other diseases. The first view is often insufficient to discover the specificity, and it then becomes necessary to examine the phenomena in detail.

A patient is suddenly seized with symptoms of a more or less serious character, and implicating the lungs, intestines, or brain. These symptoms have suddenly supervened, and progressed in a peculiar manner, so that at first you do not know to what to attribute them; but you learn that the patient is the child of gouty parents, or of parents subject to attacks of asthma or megrim; and then you suspect the existence of the diathesis of which the visceral affections are the manifestations. Should the patient tell you that he has had attacks of gout, and that the disease has been abruptly suppressed, your suspicion becomes complete conviction.

I shall not now expatiate at greater length upon the subject of specificity, as I have already very fully discussed it with you. I have now to speak of *diathesis*, a topic not less capital in relation to gout, and one intimately linked with the subject which I have just been recalling to your recollection.

The word "diathesis" has been employed in very different significations. I have already told you the meaning which I attach to

it. Without now troubling myself by endeavouring to find a new definition, I shall take that given in the *Dictionnaire de Médecine* of MM. Littré and Ch. Robin, the most complete vocabulary which we possess :[1]—"Diathesis [διαθεσις] is a general tendency, in virtue of which an individual becomes the subject of several local affections similar in their nature." This definition, recommended by its brevity, perfectly expresses the idea which I wish to express.

An individual, under the influence of a special cause, in consequence of an accidental wound, or as the result of a surgical operation, forms pus, which accumulates in abscesses in different parts of the body. He is, we say, under the influence of the *purulent diathesis*, meaning thereby, that he has a special tendency in virtue of which he becomes the subject of numerous purulent affections.

Another individual contracts syphilis : the special tendency engendered by the introduction of the syphilitic virus into the economy shows itself by very different lesions affecting different tissues ; but these lesions, however different they may be in appearance, all arise from the same cause, and are, in reality, all of the same nature. In scrofula, cancer, and all affections depending upon a diathesis, be the diathesis acute or chronic, what takes place is exactly similar. The morbid localisations are nothing more than manifestations of one general dominant tendency. But a difficulty seems to suggest itself! The general tendency is very far from constantly showing itself in the same organs, the same tissues, and the same anatomical elements. The peculiar character of the organs, tissues, and anatomical elements imparts very different appearances to the affections with which they are attacked.

To those physicians in whose eyes localisation constitutes the particular disease, the differences in appearances are so many different diseases, while to those who consider that the disease consists much more in the aggregate of the general phenomena, in their evolution, in their progress (and that, thank heaven! is the direction in which sound observation leads), these affections, differing in appearance, are only multiplied expressions of the same species of morbid action. To the real physician, exostosis, alopecia, psoriasis, roseola, bubo, and chancre are always syphilis—syphilis in different garbs.

[1] Twelfth Edition (Paris, 1865) : p. 444.

I have taken syphilis as an example, because no one will venture to raise his voice in contradiction of a fact which is now so well established—because no one could mistake pox for anything else, infinitely varied though the forms be under which it clothes itself. I have spoken of the most common manifestations of this disease; but under how many other forms, of which we cannot always at once appreciate the nature, is it not concealed! How many nervous symptoms which appear as its sole phenomenal expressions are dependent upon it, symptoms which remain inexplicable, till the more decided characters of the diathesis which has produced them afford the key to the diagnosis!

The statements which I have made regarding syphilis hold good in respect of many other diseases, and particularly of gout, the manifestations of which are infinitely varied; and which you will have to recognise under the different disguises by which it is so often covered.

But there is still another point upon which I wish to insist—that though the diasthesic tendency generally shows elective affinities for a certain number of organs, rheumatism for the large and gout for the small joints, and for certain small joints in particular, there are many circumstances in which these elective affinities seem to disappear, the diathesis presenting unexpected localisations.

It has seemed useful to call your attention to these great facts in general pathology before commencing the history of the disease which is to form the subject of these lectures.

Gout is an admirable name, because in whatever sense it may have been originally employed by those by whom it was invented, it is not now given to anything else than that to which it is applied. How often have I pointed out to you the value of names, which from being independent of all scientific pretention, are appropriate *uni et toti definito!* The names *goutte*, *vérole*, *variole*, and *coqueluche* are all the better that they have but little nosological meaning. They are excellent names, precisely because they imply nothing doctrinal, because they find a place in every system of nomenclature without expressing any article of pathological belief: they are irrespective of all theories: every one is satisfied with them, and understands them much better than the barbarous Greek and Latin terms by which it has been attempted to supersede them. "Gout," therefore, is the best name which we can make use of: it is much to be preferred to "podagra" (*podagre*) in favour with those authors who have written

in Latin, and which has the disadvantage of signifying pain in the foot, and consequently of only describing a part of the condition which it designates, and therefore requiring the complementary terms "chiragra" (*chiragre*), "ischiagra" (*ischiagre*), etc., signifying pain in the hand, in the lumbar articulations, etc. For the same reasons, it is preferable to "arthritis," which, although a term more general in its signification, has the inconvenience of only expressing the local affection of the joints, and not embracing those others so frequently present.

I now enter upon my subject.

Gout is said to be "regular" or "irregular," according as its character is frankly inflammatory, acute or chronic—according as it reveals itself by other affections involving certain viscera, or as its seat is difficult to determine.

Regular gout is the form which authors have had specially in view in that which they have described under the name of "podagra;" because in it the articulations of the foot are those which are usually implicated, particularly in first attacks.

It is podagra, or to use a better term, gouty arthritis, which we have to study in the first instance. Always remember, that although local inflammatory action of the joints is more particularly characteristic of gout, it is not the less necessary to take great account of the totality of the general precursory or concomitant symptoms which stamp the disease with the seal of specificity.

The *premonitory symptoms* of an attack of gout indicated by Van Swieten, Scudamore, and other scrupulously careful observers, have engaged the special attention of Dr. Galtier Boissière, who, in his inaugural thesis (to which I referred at the beginning of the lecture), has largely developed their picture.

In the *organs of digestion*, the dyspeptic symptoms, consisting in gastric disturbances, though not alarming, are generally, at least, very conspicuous. The appetite is diminished and irregular, presenting caprices unusual to the patient. He will, for example, select stimulating articles of diet, meats strongly spiced, and acids, as if he felt the necessity of stimulating the lazy functions of his stomach. After the repast, he will complain of gastralgic pains, of weight, and a feeling of fulness in the region of the stomach: he will have flatulence accompanied by vomiting of pituitous matter, and nidorous eructations at times tasting of rotten eggs.

In some cases, there will be a complaint of aching in the right

hypochondrium; and the physician will detect slight tumefaction of the liver. This symptom, noted by Scudamore, who believed that the hepatic affection might proceed to a material change in the structure of the organ, noted also by Portal and Galtier Boissière, is, perhaps, caused partly by the dyspeptic disturbances of which I have been speaking.

But the most prominent premonitory symptoms of an attack of gout are *disturbances of the nervous system*. The gouty subject, at this period of his attack, complains of weight in the head, and inaptitude for every kind of intellectual labour: the altered cerebral condition is indicated principally by a nervous excitability which is often excessive both in regular and irregular gout, but particularly in the latter. This nervous excitability shows itself by phenomena varying much in their character according to the individual. There is an undefinable character of discomfort, and mental uneasiness; and curious changes of disposition. Though some persons show an exaltation of their brilliant qualities, this is far from being always the case. Gouty persons generally acquire a morose, susceptible, and irrascible temper, formerly foreign to them. This is so usual that it has passed into a proverb with authors on gout. So great, sometimes, is this perversion of disposition, and so constant is it in some persons, that not only the individuals themselves know that an attack is coming on, by feeling causelessly cross for some days, but also those about them can foretell the attack by these moral phenomena; just as the catamenial period is announced in some women by a manifestation of changes in the mental condition.

In the urinary system, something peculiar sometimes declares itself. The urine assumes an unusually red colour; and deposits a sediment resembling bright pink sand, or pounded brick. The passage of this urine through the urethra causes pain, a sensation of heat, sometimes smart burning; and it is even not unusual for this irritation of the urinary passage to produce blenorrhagia.

Gouty blenorrhagia is particularly observed in anomalous gout, and is then unconnected with the emission of urine charged with sand; but, I repeat, that it is not unusual to meet with it in the frankest possible attacks. Though this blenorrhagia is attended by more or less acute pain, it ceases spontaneously, and soon. The physician ought to be aware of this fact, so that when the discharge shows itself, he may be able to calm the anxiety of the patient, and state the real nature of the affection.

Blenorrhagia is not the only catarrhal affection which complicates an attack of regular gout. The catarrhal predisposition was clearly indicated by Barthez. Scudamore has mentioned *ophthalmia*, which in some subjects supervenes a day or two before the attack. Dr. Galtier Boissière has also noticed it. In some cases, it assumes a very intense form.

Gnashing the teeth is a premonitory symptom which I have only found mentioned by Graves.[1] The celebrated clinical professor of Dublin says that the patients have an irrepressible desire to grind the teeth, and that this is excited by painful sensations in the urinary organs which they fancy cannot be otherwise appeased. The urgency of the desire to grind the teeth is so great in some gouty persons, that at last their teeth become worn down to the sockets.

Such, then, are the premonitory phenomena of an attack of gout. Afterwards, the disease declaring itself more and more, the *arthritis* becoming more imminent, it is found upon examining the regions which are about to be affected, that they exhibit a peculiar swelling of the veins. Sydenham says:—"*Quod in omnibus podagricorum paroxysmis solemne est, insignior intumescentia venerum membro vexato intertextarum se in conspectu dat.*"

The nervous symptoms of which I have been speaking generally disappear with the appearance of the more characteristic local phenomena of gout: sometimes, however, they remain, and complicate the articular pains. They may even assume so great a degree of intensity, that the bodily discomfort and mental anxiety torment and weary the unfortunate sufferers at least as much as the pains in the joints. "*Ut haud facile sit dictu utro horum æger calamitosius doleat:*" they sometimes proceed to such excess, that, to continue the quotation from Sydenham—every attack is an attack of rage as well as of gout—"*non rectius podagræ quam iracundiæ paroxysmus omnis dici potest.*" Independent of these phenomena—whether they exist or do not exist—the nervous excitability shows itself by spasms of the members which are affected by gout. The patients complain of tremors, shiverings, cramps, and very painful convulsive seizures.

Gentlemen: throughout all the morbid conditions which we have now been rapidly reviewing, have we not already seen that the

[1] Graves:—Leçons de Clinique Médicale, trad. par Jaccoud, 2me édit. (Paris, 1863) T. I, p. 598.

diathesis is in action before there is time for the local affection to show itself in a precise form? Have we not seen that gout explodes on all sides before it is definitively installed in its chosen seat? Long before any pain has been felt in the articulation destined to be the seat of suffering, the whole economy is a prey to the diathesis by which it is impregnated:—"*totum corpus est podagra.*"

At last, the time comes when the malady explodes—when the real attack begins. For some hours, sometimes for a whole day, the precursory symptoms had ceased. The patient feels better, but this improvement, when he has had experience of previous attacks, does not deceive him: he knows that it is but a truce, the prelude to a more formidable assault which he will have to sustain. He goes to bed at night apparently quite well, or at least more hearty (*alacrior*) than on the previous day; and sleeps quietly (*sanus lecto somnoque committur*). Then, suddenly, generally between midnight and three in the morning, according to the time which has elapsed since he went to bed, he is awakened by pain, which is generally localised in one of the great toes.

It is a remarkable circumstance, one quite inexplicable, nevertheless noted by all good observers, that attacks of acute gout almost always set in during the early hours of the night: Sydenham says about two o'clock. It is also a fact confirmed by observation, that the part attacked is usually the metatarso-phalangeal joint of one of the great toes. A tabular statement drawn up by Sendamore shows that this occurred sixty times in one hundred cases.

The pain at first resembles that of a dislocation (*ossium dislocatio*). To ease it, the patient rests the foot on its outer side, every moment changing its position in trying to find an easy position, but he never finds one which he can bear even for a few minutes. Should he try to sleep, the pain gives him no truce: it becomes more and more intense, and ere two or three hours have elapsed, has become quite intolerable. Those who have endured this suffering compare it to the fancied sensation of a nail being driven into the joints—to tearing of the flesh by powerful plyers—to the teeth of a dog crushing the bones—to squeezing in a vice—to the penal torture of the boot-screw, when the tormentor is constricting the limbs of the victim between planks of oak, and forcing with his mallet the corners into intervening spaces. In a word, the victim of gout describes in the most terrible language the infernal pains which he endures:—*nunc tensionem violentam vel ligamentorum dilace-*

rationem, nunc morsum canis rodentis quandoque pressuram et coarctationem exprimens. His tortures are all the more cruel that the startings of the limb prevent his keeping the foot at rest. His pains soon attain such intensity that he can bear nothing upon the affected part. The contact of the bed-clothes is intolerable; and to obtain protection from it, he lifts them up with the free foot. Should he unfortunately live in a stone-paved street, and his lodging be situated in the upper storeys, vibration of his bed caused by the vibration of the building—felt much more than in the lower storeys —makes the wretched sufferer mad with rage when a heavy vehicle passes. He is distressed by the least movement, so that no one dare walk across his room with a heavy step, far less touch the bed on which he is lying.

To have a right conception of the distressing state induced by an acute attack of gout, one must have been present at the painful spectacle: when once we know the extent of the suffering, we will be indulgent to patients who in their despair invoke the aid of all who promise them speedy relief from pain. Although your conscience prevents you from prescribing energetic remedies, which cut short attacks of gout, but produce future evil consequences, you can make allowance for the too legitimate impatience of the sufferers: you can understand why many prefer to incur the future evils with which you threaten them, than to continue to endure the dreadful present pain.

The excruciating pains, however, cease spontaneously. In a frank attack of gout, they diminish towards morning, *sub galli cantu*, as Sydenham says, while at the same time, there is a remission in the local increase of temperature and the shiverings by which the pains are accompanied. There is slight perspiration; and the patient is at last able to sleep. When he awakes, his pains are much less acute; and he observes that the part in which they are situated is red and swollen. After this, he generally gets through the day without much acute suffering; but towards evening, the pains acquire renewed intensity: at night, they are as severe as they were on the previous night: again, towards morning, they abate, and during the day, become as much lulled as on the previous day. This cycle of remission and re-accession of severe pain lasts for from four to eight nycthemera.

There is at last an end of the crisis. The pain gradually becomes less and less; and is ere long nothing more than an uncomfortable

numbness (in first attacks) which continues for eight or ten days, in persons of fifty years and upwards, but for a shorter period in those who are not so old.

In addition to the articular pain, of which I have tried to give you an idea, some patients complain of its being often accompanied by strange sensations. Some say that they feel as if a jet of slightly tepid water [*aquæ tantum non frigidæ*] was trickling along the limb corresponding to the foot attacked by gout; while a greater number state, that the seeming trickling is like that of boiling hot water or molten lead. There are others again who complain of an icy cold sensation. "Some patients," observes Ambrose Paré, "say that they burn, while others complain of icy coldness."

Let me now describe the aspect of the affected parts. Suppose that the part attacked is the great toe, which, I repeat, is by predilection the seat of the attack. The subcutaneous veins of the part, as well as of the neighbouring regions, are much swollen, as in some cases of articular rheumatism. Though there be this point of resemblance between the two diseases, there is also this difference, that in gout, the swelling of the veins, which not only occupies the foot but likewise the neighbouring parts, extending to the leg, precedes the other symptoms of articular inflammation: and although in rheumatism as in gout, there is more or less swelling of the parts accompanied by bright redness of the skin, this redness has a peculiar appearance in gout, which is very different from the bright redness of rheumatism. It is a redness resembling that of the peony rose: the skin has a shining gloss like the peel of an onion: it bears some resemblance to the appearance of an abscess about to perforate the external integument by its walls becoming thinner.

If you slightly touch the toe, or even pass the finger lightly over it, you excite excruciating pain, which will extend beyond the affected joint, and have a response in the instep. The redness is not confined to the seat of pain: it spreads gradually over a certain surface: both where it is visible and beyond that limit, an œdematous swelling is perceived, and the skin retains for a considerable time the marks made on it by pressure.

The redness, after attaining, in twenty-four or thirty hours, its maximum intensity, diminishes, or at least is replaced by a violet hue, in proportion to the degree in which the pain decreases. The œdema, on the contrary, still goes on increasing for from four to six days: when at last it has disappeared, and the attack is at end, the

joint remains stiff. There is difficulty in walking, which difficulty is enhanced by weakness, and a diminution in the sensibility of the skin in addition to the stiffness. From the beginning of the attack, the gouty patient declares that his foot is soft, and to adopt his favourite expression, it is cotton, which means, that with wide shoes, and upon very even ground, he walks with hesitating step, unable to feel the ground on which he treads. Ten, fifteen, twenty days, or more, elapse before the joint regains its normal movements.

Gentlemen, in the rapid sketch of acute gout which I have now given you, I have represented a first attack occurring in a robust young man.

At the end of the attack, and when the pain has yielded, the parts which have been affected perspire spontaneously. Some days later, the skin of the same parts slightly desquamates; and generally —I might almost say invariably—also becomes the seat of itching, a phenomenon peculiar to gout, and not observed after attacks of rheumatism.

It is unusual for more than one joint to be affected in a first attack of gout: nevertheless, in persons who may be said to be of gouty breed, the two great toes may suffer at an interval of a few days, or even simultaneously. The attack has, in general, been announced by prolonged precursory phenomena: in general, also, the foot last seized is the least affected, and the soonest to get right again. The consecutive œdema, likewise, is of shorter duration.

Sometimes, but less frequently—speaking always of persons hereditarily gouty—the joint of the great toe and other articulations of the foot, the great toe and the *tendo Achillis*, the foot and the knee, the articulations of the foot or hand are implicated in a first attack; in subsequent attacks, the progress of the disease is different. The symptoms of the disease are very different in respect of the duration of the paroxysm, the form of the manifestations, and the concatenation of the symptoms.

Here, Gentlemen, we are able to see clearly the nature of the analogy between gout and rheumatism—we see that the symptoms do not progress *uno tenore*, that they consist in a series of little attacks —*series et catena paroxysmulorum*—to use Sydenham's expression. For five or six days, the pain goes on increasing: it then becomes less severe; and the fever subsides. This ameliorated condition continues for from seven to fifteen days: the patient is under the belief that he has got rid of the enemy, when, quite suddenly, the

fever lights up again, and a new attack sets in, which, however, does not last so long as the attack which preceded it. Convalescence seems again to have commenced, when, in their turn, other joints are seized, and the attack lasts for from six weeks to three months. Am I not entitled to tell you, that there is an analogy between gout, characterised by a series of paroxysms, and acute rheumatism, which, at intervals of longer or shorter duration, involves all the joints, not previously implicated?

In this form of gout, the symptoms set in after the same fashion as in a frank attack, which may be considered typical, with this exception, that the season of appearance is not the same.

I have not yet mentioned that a first attack of acute gout usually occurs in winter, towards the end of January or beginning of February. Is this remarkable fact to be explained by winter feeding being more succulent, by animal food being the chief aliment, and there being a dearth during winter of fresh vegetables and fruits, which constitute so suitable a regimen for gouty persons? Is it explained by the circumstance, that it is usually in the winter months that festive meetings take place, when the most sober are apt to be led more or less to renounce the habitual regularity of their accustomed mode of life? The explanation is admissible, but it is also very disputable. However it be accounted for, the fact is indisputable, and has been noticed by the best observers. *Gout with successive paroxysms* shows itself early or late in the year, that is to say, at the beginning of spring or end of autumn. The wherefore, I know not.

This form of gout with its series of attacks always sets in in the same manner as the other: it is announced by similar precursory phenomena, but it gives a longer notice of its coming: its prodromata are more decided, and the person who has once experienced them is never afterwards mistaken as to what is going to happen when he feels them.

Although this form of gout is generally the sequel of a first attack of regular gout, it may also declare itself all at once in its specially characteristic form.

It is not, I repeat, one joint only which is the seat of the gouty manifestations—it is not the foot only which is attacked, as in frank gout, although that does occasionally happen: sometimes, it is the knee, sometimes the elbow, sometimes also, though not often, the hands. After having continued for seven, eight, ten, twelve, or

fifteen days, in one or more situations, it leaves them, to take possession of others: and every time, the inflammatory affection (which invades several joints at the same time) is accompanied by the same general phenomena, by fever, horripilation, and spasmodic symptoms.

I have already told you that the attack consisting of little paroxysms may last for some weeks, or even for three months. Should it extend beyond that period, it is no longer acute gout: it is chronic gout, which one must be careful not to confound with anomalous gout, even when accompanied by anomalous symptoms.

The older the patient, the more prolonged is the attack: and the attack is also more prolonged in proportion to the age the patient has attained without having had an attack, and the length of time which has elapsed since the last attack. An individual, for example, has, for the first time, been seized with gout at the age of twenty; although it is not generally till forty, that we meet with attacks made up of a chain of paroxysms, unless brought on by some immediately exciting cause, such as bad fare, or injudicious medical treatment, which by arousing the diathesis, causes the attack to occur sooner than would otherwise have been the case. The attack may be brought on by an injurious effect produced upon a joint by a blow, by over-walking, by the pressure of new shoes, or in fact, by any other mechanical violence; and it is not unusual for the first attack of gout, even when of the frankest description, to have been induced by a cause of this nature. The attack may likewise be the sequel of a course of mineral waters, or of any other unsuitable medication: it may also be determined by the fever which ushers in a pretty severe cutaneous eruption, an occurrence of which I have lately seen an example. But an attack which has not been preceded, as usual, by the general phenomena which announce an attack occurring without appreciable cause, is also of much shorter duration. Besides, when ended, it leaves behind it fewer consequences. There is less articular deformity, and what there is, is less persistent. The patient sooner regains freedom in his movements. To use the language of our predecessors, it would appear, as if the morbific matter is not at that early age sufficiently prepared to produce at once all its effects.

This rule, however, Gentlemen, is far from being absolute: to it the exceptions are numerous, and a first attack, even when it comes on accidentally, may not only last a long time, but may also leave

marks behind it as serious effects as those which remain after gout characterised by often repeated paroxysms. I know a physician, the child of gouty parents, whose first attack was occasioned by dislocation of the knee. The joint never got quite right; and the sequel of the accident was lameness, which still remains. Such cases, though exceptional, are sufficiently common to make it very necessary for you to be aware of their occurrence.

Regular Chronic Gout.—Consecutive Deformities of Joints.—Tophus, a manifestation only met with in Gout.—The Visceral Complications are very different from those which constitute Anomalous Gout and Paludal Gout.

Gentlemen: The remarks which I have made on acute gout having successive paroxysms, leads me to speak of chronic gout, into which it frequently degenerates. Chronic gout may be *regular*, *irregular*, or *anomalous*.

Regular chronic gout is generally met with in men in the decline of life. It is also the form which the disease assumes in women, who, as you know, are much less subject to gout than men. In the male subject, it does not generally appear till after fifty years of age; but it is nevertheless not very uncommon to meet with it in men of thirty or forty: in these cases, the patients have been sufferers from frequent attacks of the disease in its acute form, in early life, at about twenty or twenty-five years of age, or sometimes earlier. This acute gout, almost always, if not always, hereditary, is the more likely to become chronic, the more it has been meddled with; the more that time has not been given the disease to develope itself before it has been vigourously assailed, the more that in its first paroxysms an attempt has been made to abort its crisis; and finally, the more that after the imprudence of interfering at the wrong time, the patient has not been subjected to a regimen calculated to compensate for the evil caused by the perturbatory treatment.

Regular chronic gout, in respect of the frequency of the recurrence of the paroxysms, resembles acute gout with successive paroxysms, there being this capital difference, however, that its attacks are longer, and during the intervals, the symptoms are not entirely absent. The attacks, in place of lasting for four, five, or six days, continue for fifteen, twenty, or thirty. Again, four, five, or six joints are always either simultaneously attacked, or attacked in such rapid

succession, that no sooner does one joint get free, than another is seized; and so on successively with other joints. The inflammatory manifestations lead to engorgements of the affected parts, which continue with inveterate obstinacy. The feet, tibio-tarsal articulations, wrists, and elbows remain swollen: and the œdematous sort of tumefaction, which often extends beyond the joints, simulates white-swelling [*tumorem subalbum concitantes*]. The comparison is the more applicable, that the extremities of the bones which enter into the joints are affected, and their periosteum implicated—that there exists a veritable *dry arthritis*—that the swelling which results from this ostitis and periostitis is complicated with the production of tophaceous deposits, of which I shall afterwards have to speak.

The articular affections never altogether disappear, and the joints never regain their original suppleness of movement. Although in acute gout, once the attack is over, the patients get back perfect freedom of motion, in chronic gout, the movements are more or less interfered with. False ankylosis, to a greater or less extent, takes place; which is the result both of the inflammation of the parts, and of their having remained for a long time in an unnatural position. Walking is difficult, and sometimes impossible; and this impossibility depends not only on the lesions of which the limbs are the seat, but likewise on the general debility of the system: for there is a sensible change in the state of health, even when there are none of those well-marked visceral disorders, which at a given moment frequently become epiphenomena of the disease.

The *visceral disturbances* which supervene, coming on more or less quickly according to the individuals, consist in palpitations of the heart, and difficulty of breathing, phenomena which are sometimes purely nervous, but also, at other times, dependent upon organic lesions of the heart and great vessels: visceral disturbances also consist in pulmonary and intestinal catarrhal affections, the latter manifesting themselves in diarrhœa, and in some cases in dysentery. You can understand, Gentlemen, that under the influence of the perturbation experienced in the digestive and respiratory functions, disturbance of the plastic functions leading to debility and loss of flesh are not long in appearing: these conditions under the influence of atmospheric changes increase the severity of the usual neuralgic pains. The victims of this cruel form of gout rapidly pass into a state of premature senility.

Deformities are the most common *bad consequences to the joints*

of chronic gout. The articulations of the foot usually suffer from various forms of club-foot, particularly *pes equinus*. It is easy to understand the mechanism by which this deformity is produced. It is the result of the continuous pressure, for weeks, of the affected foot, exercised by the weight of the blankets upon its extremity placed in a vertical position. But the circumstance which contributes perhaps most of all to produce them is painful contraction of the posterior muscles of the leg, by which the heel is bent backwards, and the foot pushed forward. When the attack is over, the patient finds that he limps exceedingly, and can only walk on the tips of his toes. It is necessary, therefore, both for physician and patient to do all that in them lies to prevent this deplorable deformity, by supporting the foot in a proper position during the whole of the attack by pillows and a trough, and by protecting the foot by a cradle from pressure by the weight of the blankets.

Club-foot, however, is not the only deformity of the same kind chronic gout may leave behind it as a legacy. Other articulations may be seized in the same way. For example, it is not unusual for the knees to remain bent, from the inferior extremity having been long kept in a bad position, and from painful contractions of the muscles which flex the leg upon the thigh, contractions which may be repeated at very short intervals during an attack of from six to eight months. At last, the leg remains irrevocably bent upon the thigh, which is flexed on the pelvis.

I was acquainted with one of the great noblemen of England, who from his youth had suffered horribly from gout, who for many years was totally deprived of the use of his legs, which were semi-flexed and ankylosed, consequent upon a prolonged attack of chronic gout. This unfortunate sufferer was a cripple reduced to the necessity of sitting squat on a little platform, and making powerful use of his arms when he wished to move from one place to another.

It sometimes happens that there supervene acute attacks, attacks as acute as in frankly inflammatory regular gout. These attacks are the more readily induced that, during the interval between them, the patients have had a voracious appetite, which they have given free scope to; and that the impossibility of moving has prevented them from taking any exercise to aid digestion which is performed with great difficulty.

The acute excessive pains are essentially of a transitory character, and affect sometimes the articulations which were formerly the seat

of chronic gout, and sometimes others not previously affected. Resembling the pains of acute regular gout, like them, they declare themselves during the night, awaking the patient with a start, which they compare to the grasp of an iron hand, or a blow with a club [*ictus quasi clavæ*]. The sufferings are still farther increased by the pains declaring themselves in the course of the nerves supplying the affected parts, and by cramps in the corresponding limb. The cramps make the patients cry out with pain, and would be insupportable if they lasted a little longer:—"*si vel tantisper durarent humanam patientiam dejicerent vincerentque.*"

To fill up the measure of the misery of the patients, they have, in addition to the articular, neuralgic, and muscular pains, to endure nephritic colic, which is perhaps a still more cruel kind of suffering. This symptom, in itself horribly painful, exasperates the tortures endured by the patient, whilst the vomiting, which accompanies it shakes violently his body.

In speaking to you, Gentlemen, of larvaceous gout [*la goutte larvée*], let me say that the gravel on which depend attacks of nephritic colic and gout are sisters, to adopt the expression of Erasmus:—"I have nephritis," he wrote to one of his friends, "and you have gout: we have married two sisters." To adopt a more medical phraseology, gravel and gouty arthritis are manifestations of the same disease. The former belongs to the visceral affections to which I have just been directing your attention. It is the result of the disturbed secretory functions of the organs whose special function it is to eliminate the urates and the uric acid generated within the economy, and carried along in the current of the blood, while at the same time, the sweat is modified, both in quantity and quality, consequent upon a deranged state of the cutaneous functions. The most remarkable result of the disturbance in the functions of the skin is the production of the cretaceous concretions described under the name of tophus, and regarding which I have intentionally refrained from speaking till now, that I might do so at greater length.

Gout is the only disease in which *tophus* is met with. What then is tophus?

Sometimes, after an attack of gout, more or less acute, more or less prolonged—sometimes, also, when the patient has not had a very severe attack—we see formed under the skin around the joints, tumours more or less projecting, hard, polygonal, and not round, but having a mossy beard: they consist of accumulations of calcareous

salts which chemical analysis shows to be a mixture of soda, and urate of the phosphate of lime, the phosphate being always proportionately in smaller quantity than the urates. These calcareous deposits sometimes form in the interior of joints, and when they are very large, the surfaces of the bones lose their normal relations; whence arise deformities, which increase those already produced by faulty positions and contractions of the limbs.

Deformities produced by tophus present a peculiar appearance. The fingers, when their joints are the seat of the concretions, become warped, shortened, and irregularly knotted. Nothing of this sort is observed in rheumatism, which often leaves swellings behind it, but they are pretty regular in form, the affected joints presenting a spindle shape. I do not refer to that kind of rheumatism called *knotty*, remarkable examples of which you have seen in a patient in Saint-Bernard's ward, and in a man who was for a long period attendant in Saint-Agnes's ward.

The occurrence of tophus in gout is something far too special to escape even the most superficial observation; every author mentions it as one of the most characteristic features of the disease.

When an opportunity occurs of making an autopsy of a gouty subject—such as we have twice had, and in particular in a case which presented itself two years ago in a person who died of gravelly gout in our clinical service—we find on opening the affected joints, the articular surfaces covered with patches consisting of layers of various sizes more or less uniformly distributed, composed of a whitish chalky substance, penetrating sometimes into the substance of the cartilages. The affected articulations are generally dry; and this absence of synovia explains their stiffness during life. There are cases, however, in which instead of a diminished, there is an increased, secretion of synovial fluid; and this increase may proceed so far as to be true hydrarthrosis.

I have already stated the chemical composition of the calcareous deposits. They are largest when external to the joints. Generally, tophitic formations are small; but it is by no means unusual for them to be of considerable size. They may be as large as a hazel nut, or a pigeon's egg, and sometimes they attain the size of a small hen's egg. They may remain quite independent of the skin, which glides freely over these tumours, which form, and then become detached. It also often happens that their presence ultimately produces irritation of the integument by which they are covered. The

skin then assumes a purple hue, becomes thin, and ulcerates: at the bottom of the ulcer which is formed—generally an indolent fungous ulcer—calcareous deposits may be perceived, which can be easily detached by a pointed instrument. As they are forthwith reproduced when removed, large quantities of them are collected in some cases. Without accepting as verities the poetic exaggerated statements, to the effect that a certain Baylas and a certain Acragas were encased when alive in chalk, which they secreted in such frightful quantities that their tombs might have been constructed from the material they supplied, it is a fact, that gouty subjects sometimes produce one hundred, two hundred, or three hundred grammes of calcareous matter.

The time comes when the ulceration which furnished these tophaceous products dries up without causing any great amount of suppuration: and this occurs whether the concretions do or do not become detached: the wound then closes, leaving a small cicatrix, which at a later date, on the occurrence of a new attack of gout, will reopen, again to close and again to reopen. When the attacks follow one another at very short intervals, the tophaceous deposit accumulates round the joints, invading all of them, as happened to Gordius, who composed upon himself the following jocular epitaph:—

"Nomine reque duplex ut nodus Gordius essem."

These calcareous deposits form elsewhere as well as around the articulations. I knew an individual, the tips of whose fingers were garnished by them: in another person, the entire skin of the palm of the hands and the plantar surface of the feet were covered with chalky patches resembling the atheromatous concretions sometimes met with on the internal coat of arteries. A lady of sixty had the cutaneous palmar folds of both hands marked with white radiating lines such as are seen in those who have long been employed in tempering plaster.

It is rather remarkable, that tophus very often occupies edges of the ear: indeed, in some persons, they are even met with in that situation before the gout has distinctly shown itself. They then constitute a diagnostic sign distinguishing gout from rheumatism. I have often observed them on the lobule of the ear, as was noted by Plater, who mentions that he had a patient whose whole body, even the eyelids, was studded with them:—"*ex toto corpore, per poros, adeo ut etiam palpebræ oculorum non exemptæ fuerint, ejus*

modi materia gypsæa, circa poros cutis mox in tophos mutata, prodisset." Léger, author of a treatise on gout, published at Paris in 1753, states that he found these concretions in the lungs.

Although I cannot adduce any necroscopic observation of my own in support of the opinion, I think the question may be asked—whether certain formidable vascular lesions, aneurisms for example, may not have as their primary cause similar concretions on the internal coats of arteries? May we not attribute certain cerebral symptoms met with in gouty persons, such as vertigo and symptoms indicating softening of the brain, to the formation on the arteries of the encephalon of these gouty concretions?

Physicians who have watched the progress of the evolution of tophus believe that it is formed during the paroxysm of gout. They are mistaken: the deposit appears during the interval between attacks, or, at least, when the attacks have not been of long duration, and when they do not recur in such rapid succession as to run into one another, in which cases, their secretion has commenced during the preceding, and continued during the succeeding attack.

While, however, tophaceous concretions generally show themselves after attacks of articular gout, cases occur, as I have already told you, in which the secretion of calcareous matter takes place irrespective of any arthritic attack. This sort of *cutaneous gravel*, if I may employ a comparison based on the great analogy between the composition of urinary gravel and tophaceous concretions, gravel of the skin constitutes the sole manifestation of the diathesis, and is accompanied merely by a slight feeling of pain, of pricking unattended by any disturbance of the general health.

I have just been speaking to you of the elimination of tophus from cutaneous ulcerations. This elimination only takes place when the tophaceous concretions have obtained a pretty considerable volume. When the deposit is small in quantity, it is pretty easily absorbed; and nothing is so well calculated to promote this absorption as regular exercise combined with suitable regimen, two points of capital importance upon which I shall have to insist when I come to speak of the treatment of gout. It is generally, in the first formation of tophus that absorption is observed. The subcutaneous tumours which are formed completely disappear: the joints, the movements of which were impeded by their presence, and by diminution in the synovial secretion, regain their free mobility, and move without occasioning crepitation to indicate extreme dryness of their surfaces.

Regular gout may *supervene suddenly, and be chronic:* that is to say, its outbreak need not have been preceded by paroxysms in any way characteristic of acute gout.

In attacks subsequent to the first, the gouty person is subject to less urgent symptoms: the articular inflammation has little violence, is not extensive, and the pain is much more obtuse than in acute gout. It does not interfere with sleep: sometimes, the patient is even able to walk, and the œdematous swelling of the parts is transient. The paroxysms, however, have a longer duration than those of acute gout, and recur, at longer or shorter intervals during several months, or even years: they soon approximate, last longer, and leave the patient during his short respite, a valetudinarian, sensitive to atmospheric variations, subject to general disturbance of health which I have pointed out to you, and which is often connected with appreciable organic affections.

The combination, in some cases to a very great degree, of organic lesions of important viscera with frank articular manifestations of gout may cause one to believe in metastasis of gout to the viscera, although in reality, there is only an exaggeration of the morbid phenomena which precede and accompany both chronic and acute gouty arthritis.

Till now, we have not had under consideration anomalous gout properly so called: in it, the visceral predominate over the articular manifestations. I now proceed to speak of larvaceous gout, which as yet I have not discussed.

Larvaceous Gout.—Comparison of it with Palustral Larvaceous Fevers.—Megrim: Asthma: Neuralgia in various forms: Gravel: Hemorrhoids: Cutaneous Affections: Anomalous or Visceral Gout.—Bright's Disease.—Pulmonary Catarrh.—Suppressed Gout.

Gentlemen:—The questions which arise in relation to larvaceous gout, called *arthritis larvata* by Stoll, are assuredly among the most difficult in pathology; for, to discover the disease under the mask which it assumes, there are required not only great experience, but likewise a most scrupulous attention. Even with the most consummate experience, and the most scrupulous attention, mistakes in

diagnosis are frequent. You know what is meant by "a larvaceous fever." Under the influence by which it is produced, the palustral diathesis, predominating in the economy, reveals its existence by morbid phenomena essentially different from those which characterise the paroxysm of a normal intermittent fever. The phenomena to which I refer are neuralgic affections, disturbance of the cutaneous or intestinal secretions, thoracic, or cerebral symptoms: they are, in a word, various affections which when they appropriate an unknown something, become malignant, constituting what are called pernicious fevers, which must not be confounded with simple larvaceous fevers.

There is a larvaceous form of gout as well as of fever: the gouty diathesis may declare itself by affections essentially different from those which characterise ordinary gout. As they may constitute its primary manifestations, the difficulty of detecting the nature of the disease can be easily understood.

To give you a striking example, let me recall to your recollection a case which I related on a former occasion.

I had as an intimate friend an English major who had been long subject to megrim recurring with a periodicity so well marked every second Wednesday, that almost the exact hour of the seizure was known. So regular were the paroxysms in their progress and duration, that, strange to say, the time of their termination could also be foretold. They lasted some hours, and then left the patient in perfect health. His first seizures occurred during a sojourn in the Antilles: from that date, the attacks never failed to recur on precise days. Matters were in this state when I became acquainted with this gentleman in Paris. He was so worn out with his sufferings that he asked me, at any price, to deliver him from them. This occurred in 1825, when I was just commencing the practice of medicine, and did not know what megrim was. Acting under the advice of some of my professional brethren, I put the patient upon a course of strong doses of aloetic pills (*pilules Ecossaises*). Under the influence of this repeated purging, the attacks lost their periodicity, and occurred at longer intervals: but these changes did not prove very beneficial to the general health. Previously, the paroxysms had been succeeded by a condition of well-being, which contrasted in a remarkable manner with the feelings of discomfort which gave notice of their return. There also occurred in this case, that which occurs in persons under the dominion of diathesic periodicity, in

those who are gouty, in those who are hemorrhoidal, viz. a state of indescribable discomfort preceding the attacks, which, when they set in, are assuaged by these necessary preliminary sufferings.

My major was settled for the summer at Fontainbleau, whither he invited me to come from time to time on a few days' visit. One morning, he caused me to be awoke, that he might show me his foot which occasioned extreme suffering. Swelling and great redness of the parts plainly told me, that I had to do with a paroxysm of acute gout of a very frank character. I then suspected that it was a case of regular gout, but I did not know to what extent its manifestations ought to be respected: moreover, I did not know then that gout and megrim are sisters. Notwithstanding the principles in which I was reared in my early medical education, I was subject, like many others, to the influence of the doctrines of Broussais, at that time in full vigour; and consequently, I judged that it was necessary to subdue the inflammation by antiphlogistic treatment. Leeches were applied to the affected parts, which were forthwith enveloped in poultices sprinkled with laudanum. The inflammation subsided to the great joy of the patient, and to the great satisfaction of the physician. Only too soon had I to regret my imprudent intervention. From that moment, my unlucky friend lost his former good health. He had a second attack, which was an attack of chronic gout—irregular, moderate, and atonic. Not only was the general health altered, but there was likewise a deplorable corresponding effect produced upon the spirits and mental powers. The major lost his mental acumen and habitual gaiety of manner: he became heavy, cross, and tiresome. Ere long, he had a first attack of apoplexy; and two years later, he was carried off by a second attack.

Such then, Gentlemen, is the nature of larvaceous gout, megrim, periodic megrim preceded by general discomfort accompanied by vomiting; which latter symptom, with the headache, are characteristic, and generally last for some hours. Récamier always called the attention of his audience to it; and, before him, many others had pointed out the nature of this singular neurosis. So evidently is it in many cases a manifestation of the gouty diathesis, that articular gout and megrim are observed in the same person, the one subsiding on the appearance of the other; and that it is often, also, the only expression of the hereditary tendency in subjects who are the children of decidedly gouty parents.

We may connect with these periodic megrims certain transient cerebral symptoms occurring at longer or shorter intervals, symptoms which Musgrave, Wepfer, Van Swieten and all who have studied the question have correctly classified with the phenomena produced by irregular larvaceous gout.

There is sometimes *vertigo*, as in that man of whom Boerhaave's commentator relates, that during two years he was always seized with vertiginous symptoms when he attempted to stand up. In vain had the ablest practitioners endeavoured to cure him. Quite suddenly, he had an attack of gout, of which disease up to that date he had had no indication: from that time, he found himself free from the distressing vertigo to which he had formerly been liable.

There is sometimes disturbance of the sensorium. A gouty man was complaining of his vision: his eyes, he said, seemed as if covered with a flake of snow. These sensations disappeared after an attack of gout in the foot.

Hippocrates, speaking of epilepsy, said:—"*Magni morbi in vehementia existentis solutes coxarum dolor.*" Van Swieten mentions the case of a man, his patient, who had had violent abdominal pains, accompanied by delirium and general trembling: at a later period, this individual had a severe attack of epilepsy. From the date of that seizure, he had twice a year attacks of regular gout, and was no longer tormented by the nervous symptoms he had previously experienced.

In my lectures on *angina pectoris*, I took great pains to point out to you that that neurosis might be a manifestation of the gouty diathesis. As a case in point, I related the case of a patient whom I had recently seen in my consulting-room.[1] Similar cases could easily be collected from the writings of authors, where you will also find cases similar to those described under the name of diaphragmatic gout by W. Butter an English physician.

Musgrave and Stoll have spoken of gouty cardialgia. Hoffmann has mentioned *spasmodic vomiting* of a similar nature. Certain delusions, called *vapours*, confounded with symptoms of a hypochondriacal or hysterical character, are sometimes explained by the occurrence of attacks of regular gout. *Nervous asthma* is assuredly the most common of all these strange neuroses which are manifestations

[1] Volume First, p. 600, of this Translation.

of larvaceous gout. This is a point on which I insisted in a lecture specially devoted to this disease.[1] I shall recur to it.

Here, to confine my illustrations to my own practice, I shall describe to you the following case. I was acquainted with the brother of an apothecary, an individual celebrated in the annals of the *Ecole de Droit* of Paris, in whom attacks of asthma periodically alternated with attacks of articular gout. The thoracic symptoms recurred during two or three months without the supervention of any affection of the joints: they then occurred, when the asthmatic attacks ceased.

The same patient also suffered from paroxysms of nephritic colic, and passed with the urine either notable quantities of fine sand, or gravel of pretty considerable volume: he then had neither gout nor asthma.

In fact, *gravel*, like asthma, megrim, and other neuroses, to which I would add *hemorrhoids*, is a form of larvaceous gout.

Certain *cutaneous affections*, particularly some forms of eczema and chronic lichen, belong to the same category. The gouty nature of these diseases of the skin, long since recognised by our predecessors, is likewise admitted in the present day by the most intelligent practitioners, among whom it is sufficient to mention one of your teachers, Dr. Bazin of the Hôpital Saint-Louis. As for myself, I unhesitatingly accept as a fact this transformation of gout, of which I have seen numerous examples. Among others, I may mention the case of a friend, a distinguished literary critic, who subject for many years to attacks of regular gout, is free from them when he has the cutaneous eruption.

Gentlemen, these irregular manifestations of gout in the progeny of gouty parents, may constitute the sole expression of the gouty diathesis hereditarily transmitted to them: they may precede any regular manifestation: they may alternate with them or follow them; and in the latter case constitute a form of anomalous gout of which I have yet to speak.

In *anomalous gout*—also called *visceral gout*—the symptoms which in regular gout, acute or chronic, occupy a secondary place, exceedingly predominate over the articular manifestations, and even frequently constitute the sole phenomena of the disease. The functional disorders are usually associated with organic affections of a

[1] Volume First, p. 617, of this Translation.

more or less serious nature, though sometimes they exist independent of any appreciable anatomical lesion. In general, visceral gout is a transformation of regular gout, acute or chronic, the articular manifestations of which have been treated by violent and too long continued disturbing measures.

Among the symptoms of anomalous gout, the most important are *albuminous nephritis*, and, to be more precise, *Bright's* disease. This fact, which did not escape the observation of Bright himself, has been confirmed by Garrod, and, before him, by Rayer.[1] How often have I when called in along with this last named eminent physician to patients affected with albuminuria, found gout concealed behind the renal affection! How often have I discovered that albuminuria, whether nephritic colic or gravel existed or not, had no other starting point than gout!

Pulmonary catarrh, by which a great many aged gouty persons terminate their existence, is also a common form of visceral gout. This catarrh causes habitual congestion of the respiratory apparatus, which, on auscultation is shown by fine subcrepitant râles, by signs of chronic bronchitis, frequently complicated by pleural effusions, latent in their origin.

Although gout does not affect the heart, like acute articular rheumatism, cardiac affections, and diseases of the great vessels are very usual in gouty persons. In rheumatism, it is the endocardium which is affected, but in gout, it is the tissue itself of the heart which is implicated: there are some cases also in which chronic effusion into the pericardium takes place. Aneurismal dilatations of the great vessels have been observed; and when speaking of typhus, I told you, how, these concretions by becoming deposited on the internal tunic of arteries might up to a certain point account for the production of these serious vascular lesions.

The liver, so often attacked in regular, is still more frequently in, anomalous gout. Gouty *chronic hepatitis*, mentioned by Baglivi, Stoll, Scudamore, and others, is characterised by pains in the right hypochondrium; by an increase or diminution in the volume of the liver, rendered appreciable by palpation and percussion; by jaundice, or at least by a subicteric tint of the skin. At the autopsy, the substance of the organ is often found exceedingly hard, granular, like cirrhosis; and (according to Lieutaud) charged with calcareous

[1] Rayer: Traité des Maladies des Reins, et des Altérations de la Secrétion Urinaire. Paris: 1839.

concretions. These concretions are also sometimes found in the *lungs*, where they become moulded in the bronchial tubes, forming cretaceous arborisations, of which I now show you a specimen.

When speaking of typhus, I alluded to a patient who died in our wards, ten years ago, with symptoms which evidently belonged to visceral gout. The history of this patient's case is here in its proper place, particularly because we seldom have opportunities of seeing gouty patients in our hospitals.

The patient to whom I refer was an *employé*, forty-nine years of age, admitted to the Hôtel-Dieu on 7th October, 1858. I found him in a state of great debility and exhaustion. Although his mental faculties seemed unimpaired, his great prostration prevented him from bearing long questioning. The general pale tint of the skin suggested the impression that he had had great loss of blood. On questioning him, it was found that he had had hemorrhage from the anus some days previously; but this flux, which he estimated at 250 or 300 grammes was not enough to account for the anæmic, pale-yellow appearance of the skin.

He stated that he had always enjoyed perfect health till 1855, when he had his first attack of articular gout, which seized almost simultaneously the feet and knees. The metatarsal phalangeal articulations of both great toes were first seized. This attack of which the paroxysms were characterised by pain, swelling, and redness, never attained more than an average intensity, lasted fifteen months, and were not attended by any notable impression on the general health. It was announced by changes in the disposition of the patient, which by his own avowal had become irritable, disturbed, and excitable. This condition of mental disquiet, accompanied by dizziness, vertigo, complete insomnia, or disturbed sleep with disagreeable dreams, continued for two years, and ceased when gout exploded in the joints.

Everything seemed to return to a normal state, when the first attack of gout was over; but after a certain time, the patient again experienced a feeling of cerebral fatigue, accompanied by vague pains in the trunk and limbs: no frank paroxysm of articular gout declared itself, but the joints became painful. For these symptoms, sulphur baths were prescribed. In consequence of this medication, he fell into the serious condition which obliged him to enter our wards.

I have pointed out to you the mental and physical debility, and the great paleness of skin which we found in this patient. Our

attention was equally arrested by the difficulty which he seemed to have in breathing. On examining the chest, great effusion was detected in the left pleural cavity : fluid filled that cavity as far up as the middle of the infra-spinous fossa of the scapula. Throughout this extent, there was complete dulness on percussion : and there was heard, on auscultation, an egophonic resonance of the voice. The degree of fever was very moderate.

On the evening of the following day, nervous symptoms supervened, which next day increased in severity. At the visit next morning, I found the patient in a state of low delirium, which cleared away when he was spoken to. He answered questions like one overwhelmed with fatigue. I observed slight muscular contractions, particularly in the hands and muscles of the eye, the globes being alternately drawn in a rapid manner from one angle of the orbit to the other. In the evening of the same day, there was a diminution in the low delirium and convulsive movements : the drowsiness continued : the patient, however, still answered the questions addressed to him. He died during the night, becoming extinct, so to speak, without the supervention of any new symptoms, and retaining unimpaired to the last his mental faculties.

The autopsy was made on the morning of 11th October, about thirty-six hours after death. The decomposition of the body was far advanced, which explains some anatomical peculiarities of which I am going to speak, particularly, softening of the tissues, and a colouring of the inner surface of the vessels. In the cavity of the cranium, there was a scarcely appreciable quantity of serosity. The encephalon presented on its entire surface, but particularly at the base of the brain, a marbled opaline hue, dependent upon infiltration of the meninges, which were adherent to the parenchyma, the infiltration being greatest at the fissure of Sylvius. The cerebral substance was generally softer than usual, so that on placing the encephalon on its inferior surface, the two hemispheres separated from one another, tearing the corpus callosum. However, when a jet of water was directed upon the softened substance, no fragment was detached. There was no fluid in the ventricles. Softening was found in other organs. The heart, which during life presented neither functional disturbance nor change of volume, was soft. The only other peculiarity which we had occasion to note was a vinous red colour of the surface of the aorta, the internal surface of which was, perhaps, a little less smooth than is normal. The left pleura

contained a litre of sanguinolent serosity. The left lung was squeezed back by this fluid upon the vertebral column: its tissue was red like the lees of wine, flaccid, and resembled muscle in the first stage of putrefaction. The kidneys were blackish. In one of them, I found a small calculus impacted in one of the calices: this calculus was about the size of a hemp-seed: others of smaller size had found their way into the bladder. On opening the tarso-metatarsal, and metatarso-phalangeal articulations of the great toes, as well as on opening the left knee, we found the articular surfaces covered with a whitish substance resembling scaly white zinc. There was a similar deposit upon the inter-articular cartilages of the femoro-tibial joint, upon the ligaments of all the joints examined, and along the sheaths of the tendons of the left foot, there was a tophus as large as a pea, The concretions were pure uric acid.

The following case, which may to a certain extent be compared to that now detailed, will give you an idea of the perturbation into which the system may be thrown by anomalous gout.

A man, forty years old, of vigorous constitution, though the child of gouty parents, had from the age of twenty-five been subject to attacks of frankly regular, acute gout. Being a friend of pleasure, and incapable of submitting to any restraint which prevented him from giving himself up to it, he had had recourse to the pills of Lartigue and the syrup of Boubée whenever the paroxysms set in. The remedies never failed to produce the effect which the patient expected from them. As soon as he felt that he was going to have a paroxysm, he employed his anti-gout medicines; and as his attacks came on in the evening, when he was going to bed, his feet were sufficiently free next morning from the gouty condition to allow him to put on soft stockings, and go into society. Careless of my advice, laughing at my gloomy predictions, he continued to take his mischievous drugs. The attacks of gout, at first considerably separated from one another, and limited to the great toes, soon began to recur at shorter intervals: the hands and knees were seized in their turn. The joints became surrounded with tophus, which was at first absorbed, leaving the joints quite free: afterwards, the tophaceous concretions became larger and more permanent, and over some of them, the skin ulcerated: the ulcers cicatrised, and then formed again. The attacks lost their acuteness, and yielded less promptly to the medicines which had at first so marvellously triumphed over them. To the acute, succeeded a subacute state; and at the end of some

years, a chronic, soft, atonic gout had taken the place of the frank gout. The time came when the patient was obliged to keep his room for several months, and even to rest in his arm-chair. The pains with which he was tormented, were much less localised, but as he could not, and would not, endure them, he had recourse to opium, the doses of which he rapidly augmented. During the latter years of his miserable existence, this unfortunate man became quite powerless. His temper, naturally headstrong, became still more acrimonious, rendering him insupportable to those around him. Without any apparent cause of provocation, he gave way to veritable paroxysms of rage. At a later date, he fell into a condition resembling dementia. Becoming unable to do anything for himself, it was necessary to lift him out of bed, dress him, and place him on a seat, where he remained for the day. Bent down, and very different from what he used to be in respect of care of his person, he reminded one of the helpless patients [*gâteux*] to be seen in lunatic asylums. But in conjunction with this state of brutishness, there was no definite phenomenon indicative of mental alienation. Such was the view taken by a physician who was consulted, one peculiarly qualified to give an opinion in such a case. There was nothing the least like delirium: and when the patient was roused from his state of torpor, he always replied with precision to the questions addressed to him. He had no symptoms of paralysis. The functions of organic life were performed without perceptible difficulty. The circulation never seemed to be embarrassed: respiration was regular: he retained his appetite: and his digestion continued to be perfect. At last, he was unable to leave his bed: day by day, his torpor increased: and he died in a state of coma.

Gentlemen, in the remarks now made, I have had in view the cases in which the organic or functional affections incident to anomalous gout slowly and gradually install themselves, if I may use such an expression. There are other cases, in which the morbid symptoms supervene abruptly, constituting what the ancients knew under the name of *gouty metastasis*.

These metastases, the existence of which some physicians in vain attempt to deny, generally take place under the influence of a disturbing cause, which has inopportunely silenced the regular manifestations of normal gout. They sometimes occur in one organ, and sometimes in another, and their gravity in relation to the importance of the organ attacked, and the intensity of the affection which has

been thereby determined, may be such as to occasion death in a more or less rapid manner:—"*ita incredibile quot morbos creat materia podagrica, sæpe subitò lethales,*" says Boerhaave.

These morbid affections are *thoracic,* viz., pneumonia, or rather peripneumonic catarrh, and intensely acute pleurisy with effusion—*gastro-intestinal,* viz. gastralgic pains, vomiting, cœliac flux, sometimes proceeding so far as to simulate real choleraic diarrhœa—*icteric* affections—*cerebral* symptoms, viz. vertiginous or lipothymic phenomena proceeding sometimes to fainting and mortal syncope—and *apoplectiform* phenomena, an example of which I recently saw with my honorable colleague Dr. Chaillou, and another example of which was mentioned to me a few days ago by my friend Dr. Demarquay, who had just met with it.

Dr. Demarquay's case occurred in a man who, being attacked in the foot by very acute regular gout, with a view to sooth his intolerable sufferings, applied cold water compresses to the affected part. The pain was almost immediately relieved; but a few hours afterwards, Dr. Demarquay was sent for in great haste. When he arrived, he found the patient in a state of apoplectic semi-stupor. He spoke with embarrassed voice, and sputtered out the few words which he attempted to pronounce. Fortunately, sinapisms applied to the feet restored the articular inflammation, which ought not to have been interfered with, when, almost immediately, the cerebral symptoms disappeared.

Visceral gout seems to be the result of a sort of imperfect inflammation, analogous to that which manifests itself in the joints. The importance of the organs in which it occurs renders it much more serious than articular gout. The intensity of the phenomena by which it is characterised is, moreover, in general, proportionate to the intensity of the articular manifestations, which, having preceded it, are prematurely extinguished; and also to the rapidity with which the articular manifestations have disappeared under the influence of one cause or another.

Parallel between Gout and Rheumatism.—Articular Rheumatism: Chronic Rheumatism: Nodular Rheumatism.—Nature of Gout.

Gentlemen:—We now come to one of the most difficult ques-

tions embraced in the subject we are now considering:—Are gout and rheumatism the same disease?

Some physicians answer this question in the affirmative. Gout and rheumatism, they say, are only different forms of the same disease. This opinion, advocated by the ablest practitioners, was that of Professor Chomel, my venerable predecessor in this clinical chair. According to Dr. Pidoux,[1] rheumatism and gout have one common root, and form two branches of the same trunk, being the two great manifestations of that state which the old physicians called "arthritism," a word, which in spite of the efforts made to get quit of it, has remained in the vocabulary of science from remote times; and it is a mistake, he says, to study them as if they belonged to different species. Acute articular rheumatism is nothing more, he believes, than an expression of the arthritic diathesis. Still more, according to the views of my very dear colleague of the Hôpital de la Charité, it may be given as the nosological type of the disease; "for," to quote his words:—"it combines in a picture almost synoptical, and in the most lively striking features all the symptoms and local determinations, and presents in sharp outline all the various isolated affections which may occur in the long course of an attack of chronic rheumatism, whilst all the powers of the disease are being evolved and brought into play."

I consider that chronic rheumatism and gout have strong points of resemblance, as well as great points of difference; but between articular gout and podagra, and that which we call acute articular rheumatism, there exist only remote analogies, if we do not take into account the local inflammation, where certainly the features of resemblance are more striking.

In a first attack of gout, it is the small articulations which are seized; and, speaking generally, in seven cases in ten, it is the great toe only which is attacked. In subsequent attacks, and under certain conditions, which I have pointed out to you, other joints, including the large joints, are affected.

In first and subsequent attacks of acute articular rheumatism, several joints are almost always invaded, either all at once, or in succession; and the large articulations are those which are first seized.

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[1] Pidoux:—"Qu'est-ce que le Rhumatisme?" *Annales de la Société d'hydrologie médicale de Paris.* Vol. vii, Paris, 1860—1861.

In a frankly declared attack of gout, the general symptoms which announce the seizure, in most cases completely subside. The fever which accompanies the articular inflammation though becoming intensified towards evening, at the time of the quotidian paroxysm, does not appear for more than two or three, or at the most seven or eight days, and is never so great as in rheumatism.

Rheumatism is announced, and is likewise throughout accompanied, by a violent inflammatory fever, which continues for twenty or thirty days or sometimes for a longer period: its severity is proportionate to the intensity of the local symptoms, which present this difference from the local symptoms of gout, that while gout occasions exquisite pain even when the patient remains at absolute rest, articular rheumatism, generally, gives rise to pain only when the patient moves.

The fever, I repeat, in an attack of gout, does not continue for more than a few days: it lasts very much longer in an attack of rheumatism. The patient is fortunate if it cease within three or four weeks, though he should not have one moment's respite during that period. In rheumatism, however severe and protracted the paroxysms may be, you will never see the formation of the tophaceous concretions, which constitute a pathognomonic character of gout with frequently repeated attacks.

Once the attack is over, the gouty patient is immediately restored to health, excepting that there remains a little weakness in the limbs which have been affected: but the rheumatic sufferer is far from being so quickly re-established even when the attack has been moderate. Even when not debilitated by a too energetic antiphlogistic treatment, the patient's convalescence is slow, and characterised by an anæmic condition which is long in disappearing.

While a first attack of gout is almost invariably followed by other attacks recurring at intervals more or less brief, an attack of acute articular rheumatism does not involve the certainty of another.

One of the most striking differential characters of gout and acute rheumatism is the remarkable and almost inevitable coincidence of cardiac affections with rheumatism, and the occurrence of cardiac affection at a later period, if at all, in gout. Again, when the heart becomes affected in gout, the nature of the affection is different from that which is met with in rheumatism. In the latter, from the first attack, the serous tissues of the heart are implicated—the endo-

cardium much more frequently than the pericardium; whereas it is the muscular tissue of the organ which is directly affected in gout.

The pulmonary complications of gout are seated in the lungs themselves: of rheumatism, in the pleura.

In rheumatism, the urine is loaded with uric acid: gravel belongs exclusively to gout. But I do not mean to say, that an individual who has had an attack of acute articular rheumatism will be thereby for ever exempted from gravel and nephritic colic.

The points of dissimilarity between the two diseases are also apparent, when, leaving out of view their symptoms, their modes of evolution, their duration, and their complications, we examine their respective etiology.

Articular rheumatism scarcely ever attacks persons who have passed the age of maturity; and it is most frequently met with in youth, adolescence, and mature years. It is not unusual to meet with it in childhood, irrespective of scarlatina, of which disease, as I have told you, it is one of the epiphenomena. Gout, on the contrary, although cases of its occurrence in young subjects are on record, although I have myself met with the disease in a patient six years old, the little Moldavian boy of whom I spoke in my lectures on asthma—gout, I say, is a disease of maturity and old age, and rarely declares itself before the age of thirty or forty.

Although articular rheumatism equally attacks men and women—reservation being made to this extent, that women being less exposed to the immediately exciting causes of the malady are a little less liable—gout appears to belong peculiarly to the male sex. The disease which in certain women passes for gout is *nodular rheumatism*, which is much more common in females than in males: it has numerous analogies with, but is nevertheless in many respects different from, gout.

Heredicity plays a prominent part in the history of gout: it occupies a very disputable place in the history of acute rheumatism. In rheumatism, immediately exciting causes, such as cold, particularly damp cold, have a very great influence. In gout, the diathesis, the organic predisposition, is everything: exciting causes occupy a secondary place, and are generally of no account in the first manifestations of the disease. It is not till the individual has had several attacks, that external violence, a fit of indigestion, or mental emotion may become the starting point of a new manifestation.

The statement which I have now made respecting the influence of exciting causes in the two diseases, to the effect that it is positive in the one, and almost non-existent in the other, explains why acute articular rheumatism is much more frequently met with in the poorer classes, at least in such of them as are exposed in their occupations to sudden changes of temperature and severities of weather, than to those who are able to live under favourable hygienical conditions.

Gout is peculiarly a disease of the rich, its manifestations being never so frequent as in those who lead an inactive life, who are addicted to excesses of the table, venereal excesses, or intellectual toil, all of which promote the development of the diathesis :— "*Divites plures interemit quam pauperes, plures sapientes quam fatuos,*" said Sydenham, a dreadful sufferer from gout, who gave himself this philosophical consolation.

To sum up :—there is this capital difference between gout and acute articular rheumatism, that gout is a chronic diathesic disease, and rheumatism an accidental disease, a sort of fever proceeding *sua sponte*, which when once recovered from, leaves behind it, not the disease itself, but only consequences of the disease, organic affections of the heart resulting from the inflammation which has attacked the serous membranes of that organ. Should there be a return of the disease, the return is accidental, and not the result, as in gout, of a dominant diathesis. To the cases which have been adduced of the transformation of gout, I can oppose my long experience, in the course of which I have never seen any such transformation. I know that a gouty individual may like any other person have articular rheumatism, and that it is quite distinct in these cases from the symptoms experienced in the attacks of gout which previously occurred.

I have spoken of acute articular rheumatism, the diagnosis of which from articular gout seems to me as simple as possible. I have not been speaking of *chronic rheumatism*, an essentially diathesic disease, which is hereditarily transmitted, and may also, like gout, be acquired, and can manifest itself in a variety of ways.

Chronic rheumatism, when the type is precise and definite, presents sharply drawn distinctive characters which distinguish it from gout; but it must be admitted that there are many cases in which it exhibits so great a resemblance to chronic gout that it is almost impossible to establish an absolute distinction between the two diseases. I am not, at present, referring to cases in which the two

diatheses coexist in the same individual; for these, though the patient may know how to tell you the symptoms which belong to his rheumatism and gout respectively, the physician will be unable to distinguish the phenomena which pertain to each.

The analogies to which I refer are all the greater when not only the two diatheses coexist, but when they are also both hereditary in the same individual: a gouty person may, therefore, procreate rheumatic progeny, and a rheumatic parent have gouty children. There evidently exists between the two diseases a strong bond of relationship: "*rheumatismus agnatus podagræ*," said the old physicians; but this relationship does not imply identity. They are probably sisters of the same mother: probably, according to the comparison of Dr. Pidoux, "they are sprung from the same root, and from two branches of the same trunk;" and it is not less probable, as has been said by my honourable colleague, that notwithstanding the features which they possess in common, and their frequent interlacement, they both have natures peculiarly their own. Each of them, therefore, deserves to be studied separately, though both must be as closely approximated in the nosological programme as in clinical practice.

I hope, Gentlemen, to be able on a future occasion to give some such account of chronic rheumatism as I am now presenting of gout, imperfect though it be. Upon this occasion, I shall limit myself to sketching very rapidly the chief features which seem to establish the line of demarcation between the two diseases.

Mobility is the primordial character of rheumatism; this character at once presents itself. In gout, on the other hand, mobility does not show itself till the malady has become inveterate, till the attacks, which at first were strictly local, have frequently recurred, or the progress of the regular manifestations has been interfered with. Gout, it is true, is sometimes erratic in its nature, but primitive erratic gout is rare.

It is only in atonic chronic gout that you will see the patients very "barometrical" [*tres-barométriques*] to use a commonly employed expression, meaning very sensitive to atmospheric changes. In rheumatism, this singular sensibility is constant from the first; and is seen even before any other manifestation characteristic of the diathesis. So great is this sensitiveness in some rheumatic subjects, that they become aware that an atmospheric change is about to take place, one, two, or three days before the change occurs, the announce-

ment being made to them by their experiencing pains and feelings of discomfort which no other exciting cause can account for. Some patients will tell you that they feel the coming rain or snow, when there appears every prospect of a continuance of fine weather.

Rheumatic pains take possession of the muscular masses; and no part of the surface of the body is exempt from their attacks. Sometimes, they are localised in particular situations, to which they habitually return; but generally, they move from one place to another place, which in turn they leave, to install themselves elsewhere. They are as variable in their nature as in their seat: they are acute or dull, boring or aching, superficial or deep-seated. Sometimes, the patient experiences a sensation of heat or even of burning, of pinching, or twinging. At other times, there is an indefinite, indescribable feeling of discomfort; or, on the contrary, there may exist neuralgia perfectly localised in the course of a particular nerve or system of nerves, hemicrania, facial, intercostal, brachial, or sciatic neuralgia, the latter being the most common of the neuralgic affections. Neuralgia may affect the different organs, constituting gastralgia and enteralgia, which are dreadfully painful, and sometimes accompanied by secretions from the stomach and intestines. The former occasions vomiting, which is sometimes very copious, and the second gives rise to diarrhœa. We also meet with hepatalgia and lumbar neuralgia, simulating hepatic and nephritic colic.

The manifestations of frank gout are of limited duration; and in chronic gout, up to a certain point, they are also of short continuance: the opposite statement holds good in respect of rheumatism. In acute gout, when the attack is over, the patient resumes his ordinary good health; and in chronic gout, there are intervals of respite between the paroxysms, however long the latter may be, except, be it observed, in those cases in which the disease leaves behind it the infirmities which I have pointed out; but chronic rheumatism never quite gives up its hold of those whom it has once made its prey, in this sense, that the exciting causes will awake the diathesis—that these exciting causes, which in frank gout (whether acute or chronic) have relatively little influence, present themselves very often in rheumatism.

Gentlemen, a few minutes ago, I spoke of nodular rheumatism [*rhumatisme noueux*] also known as *primary asthenic gout* and *gouty rhumatism*, names which, in my opinion, are improper, for the affection is rheumatic and not gouty. The terms *chronic-rheu-*

matic arthritis, and *chronic primary articular rheumatism* [*arthrite rhumatismale chronique, rhumatisme articulaire chronique primitif*] would be more appropriate, were it not that *nodular rheumatism* [*rhumatisme noueux*] has greater advantages by indicating at the same time the nature of the disease, and the special form of the articular lesion which characterises it.

In my next lecture, I will make some observations on nodular rheumatism, fully entering upon the differences between it and gout.

At present, let us consider the *nature of gout*.

For the humoral and solidist theories of the old physicians, chemistry was obliged to substitute one of its own. It having been shown by chemical analysis, that in gouty persons the blood, and other parts of the body, contain uric acid, either in excess or diverted from its natural channels of elimination, it was hastily concluded, that the disease consisted in a defect of equilibrium between the acids and alcalies of the blood and the different fluids of the economy. From that time, some, including Cajetan-Taconi and Marie de Saint-Ursin,[1] believed in an alcaline gout, while a greater number, with Forbes and Parkinson,[2] believed in an acid gout. According to the latter class of observers, uric acid constituted the morbific matter, the peculiar principle of gout, and they looked upon an attack of gout as simply the consequences of efforts of nature to eliminate this excess of acid.

Modern science has developed this theory. The oxidation of the materials destined for the nutrition of the body, science said, is the fundamental act of life. It is accomplished by the absorption of oxygen, which penetrating through the respiratory passages, circulates in the blood. The combustion of nitrogenous substances, the result of this absorption of oxygen, metamorphoses the nutritive materials so as to render them in part assimilable and in part not assimilable, the latter destined to be eliminated by the different emunctories. To enable nutrition to proceed regularly, combustion must be as complete as possible. The alimentary substances most difficult to oxidate or burn (which is the same), are the nitrogenous

[1] Saint-Ursin :—Etiologie et Thérapeutique de l'Arthrite et du Calcul; ou Opinion Nouvelle sur la Cause, la Nature, et le Traitement de la Goutte et de la Pierre. Paris: 1816.

[2] Parkinson :—Observations on the Nature and Cure of the Gout, on the Nodes of the Joint: and on Diet in Gout, Rheumatism, and Gravel.

albuminoids, a fact explained by their small affinity for oxygen. Urea is the product resulting from the last stage of the oxidation of nitrogenous matters: it is soluble, and may, therefore, be thrown off in the urine and pulmonary exhalation. When the oxidation is imperfectly performed, there is a production of uric acid and urates. If the uric acid and urates are formed in such excess as to prevent their entire elimination by the normal ways, they accumulate in different parts of the organism, and by their presence occasion disturbance of the different organs to which they are carried.

This then is what constitutes the uric diathesis: and as this diathesis exists in gouty subjects, the uric diathesis and the gouty diathesis are the same thing to the iatrochemists.

It must be admitted, that the starting-point of their theory rests upon a fact which is incontestable, and which I shall explain to you by and bye: the fact to which I refer is the presence in excess in the blood and other parts of the organism of gouty persons of uric acid and the urates. But before the conclusion at which the chemists have arrived can be admitted, viz. that this excess of uric acid and urates is really the *materies morbi*, we must be sure that the uric acid diathesis is found exclusively in gouty persons.

Dr. Garrod has shown that uric acid may exist in the blood, in quantities varying with the time which has elapsed since the last meal, in persons in the enjoyment of perfect health, and who are not gouty. Again, in respect of the pathological state, uric acid and the urates are met with in other diseases besides gout. I do not cite articular rheumatism in support of this statement, because some physicians look on it as a form of gout, but I refer to intermittent fevers, in which the existence of the uric diathesis has been established, when care has been taken to analyse the blood in the first stage of the fever. It is also found in a high degree in persons who have been subject for a long time to low diet.

The results then of chemical analysis cannot be accepted as proving the identity of the gouty and the uric diathesis, because the latter is a diathesis common to different diseases which have nothing else in common. We have what may be called the diathesis of *fibrination* and *défibrination*. All the diseases termed inflammatory are characterised chemically by an excess in the quantity of fibrin found in the blood; while in other diseases, in the eruptive fevers, for example, there is a diminution in the proportion of fibrin. Though they present the one characteristic in common, they are not the less,

on that account, essentially different diseases. It is neither the excess nor the deficiency in the proportion of fibrin, but the specific cause which dominates the alteration in the blood, as it dominates the other morbid phenomena, which makes them what they are.

So it is in gout: the production in excess of uric acid and urates is a pathological phenomenon inherent, like all others, in the disease; and like all the others, it is dominated by a specific cause, which we know only by its effects; and which we term the *gouty diathesis*.

The idea of this diathesis, of this organic predisposition, is so very necessary, that without it, we should be unable to take one step in advance in the study of gout.

Let us grant for a moment that the presence of uric acid is the essential cause of the disease, how can we explain why it should happen that out of a hundred individuals placed in the same hygienical conditions, living in precisely the same manner, eating precisely similar food, one person only should have gout? How is it that the mode of life, the alimentation favourable to the excessive production of uric acid and the urates, and their accumulation in certain parts of the organism, should only produce the uric acid diathesis in ninety-nine cases in a hundred? How are we to explain the fact, that in a number of individuals leading a life of indolence, addicted to the pleasures of the table, sinning against all the laws of hygiene, not one should be gouty, while we see others become martyrs to gout, although they have always led a most active, and abstemious life? How are we to explain these differences, unless it be, I repeat, by admitting the existence of an idiosyncracy, an individual organic predisposition of an altogether peculiar character? It is this predisposition which we call the gouty diathesis.

The theory promulgated by my learned colleague Professor Charles Robin is also a chemical theory. He says:—

"On considering the nature of the fibrous tissues of the economy, we see that in the act of nutrition, they assimilate the albuminous substances, transforming them into *gelatin*, a constituent part of tissues: in the act of disassimilation, this gelatin is divided into various crystallisable principles, among which predominate uric acid and the urates. If from any cause, the disassimilation should be in an excessive degree, the result is the more abundant production of the acid and its salts, which saturate the blood, and induce a pathological

condition corresponding to that which Dr. Garrod describes under the name of the uric diathesis. The formation of tophus is explained by disassimulation taking place too rapidly, and by a consequent exosmotic transudation of the urates, whence results the deposit of these chalky masses in the cutaneous tissue, principally in the articulations where the fibrous tissue predominates. These deposits take place in the different tissues, exactly as we see plastic deposits formed in certain diseases."

If the views of M. Robin be correct, how is it that we never meet with tophaceous deposits in the essentially fibrous tissues, such as the periosteum and dura mater? The preference, therefore, which tophus shows for the joints is a remarkable fact, which we cannot explain, and which presents a great subject of reflection to physicians.

These chemical theories, expressed in other terms, are elsewhere met with: for example, in the theory of Sydenham, when he speaks of the existence of a *morbific matter* resulting from the *coctions* being imperfectly performed in the *primæ viæ* and in secondary assimilating organs. Sydenham certainly did not give a name to the morbific element: with him, there was no question of uric acid or urates, because he was not acquainted with them; but he made his *morbi seminium* play the part which modern chemistry attributes to the products which it has discovered. Take it all in all, the theory of the great English physician is much more medical than the theories of modern chemists.

TREATMENT OF GOUT.

Gentlemen: Ought we to treat gout? I mean, ought we to intervene actively during the paroxysms? Such a question would assuredly appear very singular, and possibly very impertinent, to the gouty patient: it would seem equally strange to a large number of physicians who cannot understand why there should be hesitation in interfering for the relief of the dreadful sufferings of which I have been sketching the picture. However great may be my desire to relieve my patients, I still ask myself the question:—Ought we *to treat gout?*

Is it right to employ treatment to quell the cruelly painful articular manifestations? Ought we to treat chronic gout?

Ought we to treat larvaceous gout, anomalous gout, retrocedent gout?

Sydenham, whose authority in such a matter is immense, inasmuch as independent of the experience he acquired as an eminent practitioner, he had had great opportunities of studying in his own person the disease by which he was tormented, and of judging of the good and bad results of the different medications which he employed, answers the question negatively, in respect at least of normal gout.

The conclusions at which he arrived as to the nature of the disease, concurred with the results of his own observation to show him the necessity of abstaining from interference. To him, the gouty subject was a sort of charged machine which had to be discharged externally, by some safety-valve, so as to prevent an internal explosion. The same sort of thing happens in gout as in the eruptive fevers, the cutaneous manifestations of which ought to be religiously respected. Should the morbific matter not find an issue by the external outlets, the excess of the excrementitious matters is driven back upon the internal viscera, causing morbid symptoms of a much more serious character, than those which occur in the natural and salutary course of the disease. Upon principle, Sydenham rejects the use of all topical means, which are often injurious and never useful. The medications which he recommends act upon the whole system, promote "coction," aid the elimination of morbific matter, and contribute to the defence of the organism in the contest which it has to sustain.

As to pretended specific remedies, the number of which was considerable in the time of the poet Lucian, who enumerated them in his pleasant poem the *Tragopodagra*, and had greatly augmented when Sydenham wrote, which goes on increasing in our day, when they have increased with incredible profusion in the fourth page of the political papers, and sadder still, even in our medical journals—against these mischievous drugs, Sydenham thus energetically raised his voice:—"*Sane dolendum est, medicinam* (*artem nobilissimam*) *hujus modi nugis quæ sive ab inscitia, sive a pravitate scriptorum, credulis objiciuntur, usque adeo deturpari.*"

Without adopting the theoretical views of Sydenham, without even being able to form a satisfactory opinion as to the nature of gout, my personal experience leads me to pursue a course as reserved as that recommended by Sydenham. During the last thirty years, I have treated a large number of gouty patients. At the

commencement of my practice, like many others, I attempted to fight with the disease: now, I cross my arms, and look on: I do nothing—absolutely nothing—to subdue attacks of acute gout, particularly when they occur in individuals in the prime of life. More than once I have had occasion to regret departing from this do-nothing system, and been led to realise how perilous the adoption of active treatment might become. When, strong in my conviction, I have left the malady to itself; when the patient has resigned himself to suffer, I have always seen him emerge from the crisis in the best conditions; and thus, at the cost of some suffering, I have purchased for my patients months of perfect health. When, on the contrary, I have interfered with the paroxysm, which, unfortunately, is easily done, I may have escaped the dangers of shifted gout, but I ran the great risk of seeing the attacks recur at shorter intervals, and of transforming a frank and transitory gout into a cold, atonic, persistent gout. I have felt the entire truthfulness of Sydenham's aphorism:—"*Hoc in morbo dolor amarissimum est naturæ pharmacum, qui quo vehementior est eo citius præterlabitur paroxysmus, atque insuper et longior erit intermissio et magis perfecta; et vice versa.*" I am now careful to use no means to smother the pain, which I look upon as very favourable to gouty patients: and in atonic gout, my desire is to see a return of the acute attacks, a return however, which it is very difficult to induce by artificial means.

But in that form of acute gout, which I have called the *chain* form in which, after four, five, or six days of suffering, new pains arise, the attack going on in this way for two, three, or four months, it is very difficult to refuse to give some relief to patients who implore it. That is especially difficult when the physician has not sufficient authority to convince the patient of the usefulness of this bitter remedy. Under such circumstances, one is obliged to yield, lest the patients in despair should fly to those gout-curing drugs which, when taken immoderately and without serious consideration, risk future evils by cutting short the paroxysm. In the case of such patients I interfere as a matter of duty, avert greater evils, and give protection from ignorant unscrupulous empirics. I act with a view to moderate the pain, to render it bearable, but not to extinguish it. I administer with the utmost possible prudence and method the medicines which I judge most useful, and involving least risk of proving injurious.

I have no doubt that the fears which I have now expressed of the dangers of the remedies applied to the treatment of attacks of gout will to some persons appear exaggerated. I know that there are a certain number of gouty persons who have arrested their paroxysms with impunity; and the knowledge of this induces others to repeat the experiment. But I ask—do these exceptional cases weaken the general rule?

Would we be justified in suppressing the menstrual flux because some one young wife or maid had had her courses abruptly stopped without much injury to her health? Supposing we had seen, in a young man, an habitual hemorrhoidal flux suddenly interrupted, with no other detriment to the general health than slight giddiness and headache, should we be justified in concluding from that fact that the suppression of a flux which was right in a man in the full vigour of life would not prove prejudicial if practised in the case of an old man? Certainly not: no physician would deliberately advise such experiments to be tried. Every physician knows that the supplementary functions which are constituted by habitual fluxes, serve useful purposes, and can only be interfered with when careful management is adopted.

Equally respect the external manifestations of gout, respect the articular pains, respect them especially in persons of advanced age. It is less dangerous to interfere with them in young subjects, provided great prudence be used, the means being proportionate to the strength of the patient, and the facility of being relieved by natural or temporary emunctories. There are persons in whom some maladies terminate favourably of themselves, by sweating, by diarrhœa, or by a urinary flow. I therefore advise you to pursue your medications in the same direction as indicated by nature.

When gout is visceral, non-intervention is not allowable; for there can be nothing worse than such an affection. In visceral gout, we must try to bring back the gouty manifestations to the joints, which, as I have already said, it is not easy to do: in such cases, it is justifiable to give the medicines supposed to possess anti-gout properties.

Colchicum is the most efficacious of all the anti-gout remedies which have been lauded. On this point, there can be no possible doubt: its virtues have been long ago recognised. It was called *theriaca articulorum* by Avicenna;[1] and Ætius said:—"*Hermodac-*

[1] Lib. II, Cap. CCCLII, p. 247.

tylon confestim minuit dolores." His "hermodactylon," as M. J. E. Planchon[1] shows, was *colchicum variegatum,* which does not differ in its properties from *colchicum autumnale,* the basis of most of the pretended anti-gout nostrums, so deplorably employed. It is the basis of the *eau médicinale de Husson,* the specific of Reynold, the specific of Want, &c. as well as of the too celebrated pills of Lartigue, which have been productive of so much mischief. It is probably to veratria, its active principle, that colchicum owes its sedative and contra-stimulant properties. Veratria, as well as such plants as cevadilla, and white hellebore (which contain veratria in larger proportion) takes its place in other nostrums, such as the remedy of Laville.

The most usually prescribed preparations of colchicum are the extract and the tincture of the seeds: the former is given in doses of from five to eight drops, and the latter in doses of from twenty to fifty centigrammes. The use of the medicine is continued during two, three, or four days. The same rule is observed in respect of the wine of colchicum, which is administered in doses of from five to twenty-five grammes. The tincture of the seeds is the preparation which enters into the composition of most of the anti-gout liquors which charlatanism has decorated with a variety of names.

When I prescribe colchicum I adopt Dr. Becquerel's formula for pills, which is as follows:—

Sulphate of quinine . . .	150 centigrammes.
Extract of digitalis . . .	25 „
Extract of colchicum seeds . .	50 „

To be made *s. a.* into a pill-mass; and divided into ten pills.

Of these pills, the patient is ordered to take from two to three in the twenty-four hours, for from three to five consecutive days.

These pills differ very little from pills prepared according to an older formula of Dr. Debout, who employed them with good results in cases of gouty megrim. The following is his formula

Extract of colchicum . . .	3 grammes.
Sulphate of quinine . . .	3 „
Powder of digitalis . . .	150 centigrammes.

To be made into a pill-mass, and divided into thirty pills.

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[1] Planchon:—De hermadactes au point de vue botanique et pharmaceutique. Paris. 1855.

One of these pills is taken every evening. Under the influence of these medicines, I have seen the pain of the gouty paroxysm cease within seven or eight hours.[1]

Colchicum and veratria are not the only remedies which have the power of quieting the disease. This property is shared with them by all the great perturbatory remedies, such as bleeding, and purging, particularly purging with drastics, one of which, colocynth, enters into the composition of certain so called specifics. However, while these perturbators give, to a certain extent, an account of their action, colchicum and its succedanea usually induce neither notable alvine flux, profuse sweating, nor augmented flow of urine, the perturbation caused by them seeming to exert a powerful impression on the nervous system.

The energy with which these medicines act makes it necessary for physicians to exercise the greatest prudence in their administration: to avoid producing retrocession of the gout upon the viscera, or transforming acute into chronic gout, it is requisite to begin with small doses, so as to moderate without entirely or abruptly removing the pain. I never use them at the beginning of the attack, but wait till it has lasted some days, and is drawing to an end. By acting in this way, we abate the present symptoms, without subjecting the patient to much danger; while we may likewise hope to modify the future symptoms.

It is often better, I repeat, to do nothing, and have present to the mind the fact, that the attacks of gout are separated at greater intervals from one another when the preceding attack has lasted for a certain time. Lucian makes the hero of his *Tragopodagra* say:—

> Irritantibus me
> Soleo occurrere multo iracundior,
> His vero qui cogitant nihil adversum mihi
> Benignam adhibeo mentem, facilisque fio.

Gentlemen, I have said nothing to you of *topical remedies*, which all physicians agree in denouncing. There is, however, one local medication which has rendered me real service, of which I shall now speak. It is true that this medication is not indicated during the paroxysms (although it may be useful, and is free from danger at the termination); but it is applicable in the intervals of the

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[1] Debout:—*Bulletin de Thérapeutique*, for February, 1857.

paroxysms, the return of which it may prevent. I refer to *tobacco fumigations.*

Every eight days, from the moment the attack is over, the patient exposes the joints which have been affected, to the smoke of tobacco leaves burned in a chafing-pan. The heat ought to be strong. The smoke is received in a large stocking, or in woollen blankets, enveloping the affected parts.

The efficacy of a proceeding of this description may, it appears to me, be thus explained. Experience has shown that causes capable of exciting pains in a part of the body act nowhere more vigorously than upon those which have been the seat of gout. For example, the pressure of a tight stocking will often be sufficient to excite the return of a recent attack; and, in passing, let me add, that this fact may sometimes be advantageously employed to recall the gouty pains to the foot, when, having abruptly ceased, the patient experiences morbid symptoms in the viscera, which symptoms, it is important to remove. We can thus understand why an obtunding medication, such as tobacco smoke, may prevent the return of the paroxysms by diminishing the susceptibility of the parts.

Granting, Gentlemen, (that which I deny), that there is never danger in combating the manifestations of frank articular gout, to suppress the local manifestations is no more curing the gout than making syphilitic eruptions disappear by topical means is curing the pox. We no doubt accomplish a great deal when we render the external manifestations fewer and less acute; but as Cullen remarked, "gout, which is a disease of the entire economy, and very often depends on original conformation, cannot be cured by medicines which only produce very transient effects." The diathesis continues to such an extent that, without being exposed to influences different from those which act on other men, the gouty patient will again be subjected to gouty paroxysms. To cure gout, is to destroy the gouty diathesis. This, it is alleged, can be done by the aid of certain medicines.

During the last century, physicians, struck with the affinity between gravel and gout, proposed the plan of giving gouty patients remedies which have been called lithontriptic washes [*lessives lithontriptiques*] alcaline solutions, such as Glauber salts, or solutions made with the carbonates of lime, of soda, &c. which appear to be so beneficial to individuals attacked by gravel and nephritic colic.

This alcaline method of treatment, soon abandoned even by those

who had most extolled it, has, in our day, been restored to its place of honour by the defenders of the chemical theory of the uric acid diathesis.

I should not be telling you anything which you do not already know, were I to rehearse all that has been said on the employment of alcaline mineral waters in the treatment of gout. You are aware that while the waters of Carlsbad, of Vichy, of Vals, and other places have their ardent defenders, they have been rigorously proscribed by physicians of the highest eminence who had learned from experience that they were dangerous.

Gentlemen, I know no medication more perilous than that by mineral waters, when administered without reserve, without discernment, and without reference to the individuals' conditions of health, the form of the gout, the time which has elapsed since the last attack, and the probability of a fresh attack not being imminent. Not a year passes, in which I do not see the evil consequences of the use of mineral waters in gout.

Do I mean by this statement to interdict absolutely their employment? Certainly not. With Dr. Durand-Fardel[1] I believe in their beneficial action; but in a degree which is very limited.

As a general rule, alcaline waters ought never to be taken for more than ten or twelve days consecutively; and only in small quantity at a time. It is well not to revert to their use more frequently than once a month for the limited period I have named. By continuing their use for a long period, or almost constantly, or taking them in enormous doses (as some do not hesitate to order them to be taken), is to run the risk of having a frank gout converted into a gout which is chronic, vague, and visceral. In relation to this point, allow me to quote the opinion of Prunelle, a man very competent to form correct views on such a subject. He says:—

"Before venturing to prescribe Vichy or other mineral waters in the interval between the paroxysms of gout, it will be very important to be well informed as to everything which has taken place since the last paroxysm, and to ascertain to what extent the discharge of sweat and urine during the paroxysms had been looked on as critical. For, very evidently, if the gouty paroxysm has been imperfect, the elaboration perhaps preparing for one more complete, ought not to have been interrupted. An interruption of this kind is

[1] Durand-Fardel:—Dictionnaire Général des Eaux Minérales, et d'Hydrologie Médicale: 1860.

sufficient to change the mode of action of the medicament, and to begin a metasyncrasis. The results of the latter, as frequently happens, are the suppression of the articular gout; but all medical observers are agreed in considering this suppression as unfortunate, and as sometimes the source of very great danger. Hence it is, that as the waters of Vichy possess violent perturbating powers, it is necessary to avoid employing them in the intervals between the paroxysms of articular gout."

In articular gout, whatever might be its acute or chronic form, the celebrated physician of Vichy prohibited the use of baths, not only baths of the mineral water, but likewise baths of ordinary soft water. He restricted himself to prescribing the mineral water to be drunk in very moderate quantities, with a view to combat the diathesic manifestations which may arise in the digestive canal or urinary passages.

The practice of Prunelle is to-day the same as has long been the practice of Dr. Durand-Fardel, who prescribes the water to be taken in very moderate doses, so as not to fatigue the digestive organs and thereby attract towards them gouty manifestations. But, though Dr. Durand-Fardel recommends that in acute gout the use of baths should be abstained from, lest they act too energetically upon the general system, checking the articular manifestations, and determining metastases, which are the more dangerous that the action of the medicament cannot be directed, yet in chronic gout, he recommends them to be employed, provided the patients are carefully watched.

In thus advising as to the use of the waters, the administration of which he so ably directs, Dr. Durand-Fardel contests the explanation which chemists have given of their salutary action. Neither the alcaline waters of Vichy, nor of Vals, Carlsbad, nor Pougues—which, in certain cases, within narrow limits, it is true, find their indications—act beneficially by neutralising the uric acid, which the chemists allege is the cause of all the morbid symptoms of gout. Admitting that changes take place within the living body as they do in the experimental vessel of the chemist, the blood and the secretions, in place of containing uric acid would contain urates, and we should hardly have obtained any change, because as Dr. Garrod has shown, it is in the form of urate of soda that the uric acid exists in gouty persons.

Alcaline mineral waters, then, do not act upon the uric acid,

which is the consequence and not the cause of the disease, but on the diathesis itself: or at least, they act by combating the different pathological states which the diathesis induces, that is to say, disorder in the digestive function, in the urinary and cutaneous secretions. They act, in fact, by regulating the great functions which constitute nutrition.

It is in a similar manner that the waters of Plombières and Contrexéville, the mineral ingredients of which exist in very small proportions, have also a useful action upon some gouty persons, by improving assimilation.

In a similar manner act likewise the preparations of quinine, which constitute the basis of the remedies of Held and Giannini, the preparations of nux vomica and quassia amara, the tincture of guaiacum of the codex,[1] and its analogue the ratafia of Caraibes: they are expressly indicated when it is necessary to restore lost tone to the organism, and particularly to the organs of digestion. It is, therefore, particularly in the treatment of chronic gout that these medicines will find their place.

In the treatment of this form of gout, certain mineral waters are appropriate. When the patients present all the symptoms of anæmia, when asthenia seems to predominate, the ferruginous waters such as Spa and Pyrmont are useful; and better still, when the gout is more visceral than articular, the chlorinated sodaic waters of Wiesbaden, Kissingen, Kreuznach, and Hombourg.

Wilbad, Néris, and Luxeuil are the most salutary to neuropathic individuals; but, when the object is to combat not only the gout itself but the lesions which it brings in its train, such as articular engorgements, the chlorinated sodaic waters, and certain sulphurous waters, are more useful. Aix in Savoy, the soft springs of Bagnères-de-Luchon, of Cauterets, and of Schinznach (in Switzerland) ought to be preferred. On more than one occasion I have satisfied myself as to the beneficial action of these waters, particularly the waters of Aix in Savoy. Let me add, however, that these waters have no efficacy, and their administration is not exempt from danger, unless the gout has been quiet for a long time. In atonic gout, and still more in regular gout, their unseasonable use might induce visceral morbid symptoms; and gout thus provoked might have the most deplorable issue.

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[1] Codex Medicamentarius, p. 376: Paris, 1866.

The chlorinated sodaic waters, the sulphated waters, the weak sulphurous waters, such waters as those of Néris, Wilbad and Luxeuil, are also indicated in cases in which gout is complicated with rheumatism.

I may say as much for hydrotherapy. When methodically employed, it beneficially modifies the consecutive accidents of gout. By rousing the cutaneous and urinary functions, by opening all the emunctories, and stimulating the entire system, hydrotherapy augments the peptic powers.

Gentlemen, all the different means of treatment fail in any way whatever to constitute specific remedies: in this respect we are no more advanced than was Sydenham when he said:—"*Therapeia* Radicalis *et usque quaque perfecta, qua quis etiam a diathesi ad hunc morbum foret liberatus adhuc in Democriti puteo latet, atque in naturæ sinu reconditur; nescio quando, a quibus in lucem extrahenda.*" But although we cannot hope to destroy radically the diathesis, we can at least endeavour to weaken its injurious tendencies; and according to the opinion of all great practitioners, it is in the regime that we find means of arriving at this result.

The rules laid down by Sydenham are still those which we have to follow in the present day: I cannot, therefore, do better than give you an abstract of the long paragraphs which he has devoted to this object.

It is essential to be very sober, and not to eat food difficult of digestion: but it is also necessary to avoid a too great abstinence, which leads to debility.

As to the nature of the food, we must consult the gout or rather the aptitudes of the gouty patient; and we must strictly regulate the hours of his meals. Wine may prove injurious as an ordinary beverage, but the exclusive use of water will be still more hurtful. Between the abuse of one or other, a middle course was recommended by Sydenham. He recommended the use of a mild ale brewed at London; and he allowed the wines of Spain in preference to those of France and the Rhine.

Every kind of excess being injurious to gouty persons, they ought to avoid immoderate venereal pleasures, and prolonged want of sleep; but they must not remain too long in bed, and as a rule, they ought to go to bed early and rise early.

Though fatigue is injurious, moderate exercise is one of the best means of assisting the nutritive functions. The exercise ought to be regular: and that which is taken in the country is much to be

preferred to that taken in towns, where the air is close and filled with noxious exhalations. The gouty individual ought every day to take a walk, or, better still, according to Sydenham, to ride on horseback. If he can do neither, he ought to take carriage exercise; which for the aged is indispensable.

The religious observance of these rules have a favourable influence on the constitution of gouty subjects, diminish the frequency of the attacks, and enable the system better to resist their effects; but are far from promising a cure.

Sydenham says:—"Quamvis hujusmodi regulæ tam diætam quam cæterum regimen spectantes, si ab homine podagræ obnoxio religiose observentur, eum ab enormioribus morbi insultibus præservare queant, atque istam sanguine et partibus solidis firmitatem conciliare, quæ ab illa malorum iliade, unde morbus non solum supra humanæ potentiæ vires, sed et funestus tandem redditur, eundem immunem praestare possit: non tamen efficient ut non post quædam intervalla maxime exunte hyeme, podagra quandoque sentiatur."

LECTURE LXXXIII.

NODULAR RHEUMATISM, ERRONEOUSLY CALLED RHEUMATIC GOUT.

The disease is very rare in men: it is more common in women.—Generally chronic, supervening all at once.—Sometimes subacute at the commencement.—It is a manifestation of the rheumatic diathesis.—Pains and Museular Retractions.—The Heart is seldom affected.—Rheumatic Complications, however, have been observed in the heart, pleuræ, lungs, brain, and kidneys.—Essentially a chronic disease in respect of its duration.—Successful Treatment by different medicines.—Tincture of Iodine, given internally, ought to be preferred.

Gentlemen:—Nodular rheumatism being a disease which you will seldom see in the clinical wards, I ought not to-day to neglect speaking to you of it, as in the wards of Saint-Bernard and Saint-Agnes, you have an opportunity of studying its principal characters in two of our patients. Let me also add, that you will seldom see in an hospital the beginning of the disease, and that in the asylums for incurables in the Salpêtrière and at Bicêtre, you can only study it in an advanced stage, when it has existed for years, when the patient has been domiciled as an incurable.

In bed 3 of Saint-Bernard's ward, lies a woman forty years of age, who complains of articular pains in the fingers, wrists, elbows, and knees. The painful joints are swollen: but the skin which covers them has retained its natural colour; and on applying the hand to the affected parts, no appreciable increase of temperature can be detected. The most striking feature of the case is the deformity of the affected joints. The patient has no fever, and retains her appetite, though pale, and very much reduced in strength. She told us, that in consequence of the pains having successively invaded most

of the joints of the hand, she had been obliged to abandon her occupation as a seamstress. Menstruation is regular. Neither gout nor rheumatism was ever known to have attacked any member of the patient's family.

This woman formerly enjoyed good health. She had, however, scarlatina eight years ago, when the joints of the hands and wrists were attacked by scarlatinous rheumatism, which only lasted a few days.

As one of the antecedents in this case, I ought also to mention periodical megrim accompanied by vomiting, which on each occasion greatly prostrated her strength. Megrim, you know, is a diathesic disease, often met with in members of the same family. It most frequently shows itself in youth and mid-age: after the age of forty or fifty attacks of megrim, having already become more rare, cease to occur, to the great satisfaction of the patient; but at that period of life, other morbid manifestations appear.

In our patient of Saint-Bernard's ward, the megrims showed themselves with their usual intensity up to the age of thirty-eight: for the last two years, they have been less frequent, less painful; and from that time, the first symptoms of a new malady appeared. Both knees became the seat of pains, which at first were transient, and the knees seemed to be rusty; but by the end of the day, the pain disappeared, and the play of the joints was more easy. Gradually, however, the pain became more tenacious, and the articular movements were impeded. At the same time, the pain invaded both wrists, without leaving the knees: it recurred at intervals, and on each occasion seized some other joint. It first attacked the metacarpo-phalangeal joints, and then the phalangeal articulations: finally, after five or six months, it seized the shoulder, elbow, and tibio-tarsal articulations, and several joints of the toes, to such an extent that the patient could no longer bring to her employers the work which her disabled fingers had painfully accomplished.

For three months, this patient has been confined to bed, and unable to move. At present, although the treatment has sensibly modified the state of the joints, you can still recognise the curious deformities which give the fingers the appearance of long pods. The knees are swollen: there is great stiffness in the haunches, elbows, and shoulders. The greatest articular deformities are those of the wrists. The slightest movement occasions great pain in the joints, which present soft, doughy swellings, unaccompanied by redness:

on the dorsal aspect of the right wrist, there is a swelling as large as a hen's egg.

This tumour seems to be composed of fibrous tissue with large pouches containing a semi-fluid substance. Pressure is not painful: and though it somewhat modifies the form, it does not change the volume of the tumour. It is probable, therefore, that the fluid within the tumour does not directly communicate with the sheath of the tendons in the wrists, nor with the radio-carpal articulation; or else, the fluid is too viscid, too thick, to be easily displaced. Perhaps the tumour is situated in the cellular tissue which lines the synovial cavity, and sometimes, in such circumstances, becomes very thick. Under the influence of general treatment, and the use of some hot sand baths, the swelling, so great at one time, has entirely disappeared.

Do not suppose, Gentlemen, that the articular nodes of gouty rheumatism have always a fibro-cellular character: some are of a bony nature, from the heads of the bones being swollen, a condition which may have proceeded so far as to destroy the mutual adaptation of the articular surfaces, and induce almost complete dislocation. In our patient, the phalangeal joints presented slight osseous enlargements, which imparted to the fingers a state to which Sydenham has alluded in treating of chronic rheumatism.

Our patient, helpless from the articular pains, had an exceedingly anæmic appearance, and her muscles were wasted from inaction. There were no muscular contractions: the patient had never had cramps in the limbs. The heart, carefully observed on several occasions, never showed the slightest abnormality in the rhythm of the pulsations, or in the character of the sounds. As a rule, the heart is not implicated in nodular rheumatism.

I stated that this patient's condition was very much improved by the treatment to which I submitted her: in point of fact, the joints have recovered some of their movements; and the nodes have lost much of their size and sensibility. The general health has become better: good fare has caused the anæmia to disappear. The patient will soon be able to leave the hospital, and resume her ordinary occupations; but sooner or later, new pains will show themselves, and whatever measures be adopted, there is reason to fear that the ameliorations obtained will be only transitory.

Though nodular rheumatism be most common in women, it is sometimes met with in men. You must have observed a male atten-

dant in Saint-Agnes's ward who discharges his duties well rather than badly. To obtain the right of residence in the hospital, he assists the regular servants: you must have observed his peculiar gait as he moves from bed to bed. By trade, he is a basket-maker. He has been a resident in the hospital for the last seven years. Prior to that date, he earned his livelihood by his trade; and according to his own statement was never given to excesses. There were, he said, neither gouty nor rheumatic subjects in his family. Little by little, the knees, feet, shoulders and wrists, and at last the hands, became the seat of pains which continued some days, recurring in paroxysms. The joints soon became swollen and deformed; and the patient was obliged to keep his bed. When admitted to Saint-Agnes's ward, he was bent double. For seven months previously, he was unable to leave his bed.

The vertebral articulations in the dorsal and lumbar regions appeared to be soldered together: the coxo-femoral articulations were rigid. This patient, before taking to his bed, acting under the advice of numerous physicians, went to Wiesbaden, Aix-la-Chapelle, and Bourbonne. From his residence at these different stations, he derived only temporary relief, the rheumatism continuing to hold its place in most of the joints. For three years, I submitted this patient to a combined treatment by the tincture of iodine in large doses, vapour baths, sulphur baths, sublimate baths, and the application of bags of hot sand to most of the joints. At the end of this period, the affection seemed to be arrested, and the patient was able to leave his bed.

He still suffers sometimes, particularly when there is a change of weather; but the pain has become bearable, so long as the patient abstains from movements which irritate his joints. The malady was only checked: the stiffness of the vertebral column continues, the haunches and knees have not completely regained their power of movement, the tibio-tarsal articulations and the joints of the toes are almost entirely immoveable; and in walking, the patient describes with each leg arcs of a circle: he cannot run, and his walk is like the waddle of a duck. The movements of the shoulder and elbow are partially preserved, as are likewise those of the wrists, but the digital phalanges are soldered together, and the fingers are semi-flexed, and unable to execute any precise movement.

Whatever we may do, this patient will never be completely cured: the osseous nodes and the subluxations will never disappear: it is

accomplishing much to have obtained an almost entire cessation of pain. His general state will always remain relatively bad; and the hygienical conditions in which he now is, from prolonged residence in hospital, will predispose him to have, sooner or later, new rheumatismal attacks.

When describing to you the principal details of the case, I did not at all anticipate that the death of the patient was to occur at an early date. In the winter of 1863, he complained of pain in the chest, for several months he had bronchitis; and when he asked me to examine him, I ascertained the existence of pulmonary tuberculisation, already far advanced, and from which he ultimately died.

At the autopsy, we found much slighter lesions than we had expected. Correctly speaking, the joints were not dislocated: there only existed forced flexion of some of them, and relaxation with thinning of the ligaments in the sense of extension, consequent upon the traction to which they had long been subjected. The articular cartilages were eroded, worn, at the points where pressure on the articular surfaces had been strongest and most prolonged. At last, the heads of the bones became partially deformed by the production of small granulated osteophytes in the vicinity of the points from which the cartilages had disappeared. In this situation, there were other points in which the osseous substance had become very thin, friable, and in such a state as to admit of its being cut by a knife. There were evident indications of chronic phlegmasia having existed. The nodosities of the joints were due to a strong projection of the partially displaced heads of the bones, but not displaced, as had been supposed during life, by the tumefaction of the bones; for, I repeat, there were only very small, granular, osteophytes, which hardly projected beyond the surface of the bones.

Here, I may appropriately narrate the case of the woman who occupied the last bed in Saint-Bernard's ward, and which presented to you the first symptoms of nodular rheumatism. The patient, forty-five years of age, irregular in her menstruation for some months, had lived under favourable conditions up to the day on which she entered the Hôtel-Dieu, was seized, after a chill, with pains in the knees and right haunch. She was, nevertheless, able to continue her occupation as saleswoman in a haberdasher's establishment: the pains, however, became more acute and more constant, and pains soon invaded the elbows and wrists. She then asked to be admitted to the Hôtel-Dieu: I detected an obvious engorgement

of the knees and wrists, in which parts, as well as in the right haunch, every movement excited acute pains. In the evening, for fifteen days, there was an exacerbation of the pain, accompanied by slight fever.

The patient was pale, anæmic, and had little appetite. On listening to the heart, a blowing-sound was heard, soft at the base, and extending into the vessels of the neck; but there were no signs of organic lesion of the valves.

After treatment by tincture of iodine, an obvious amendment was soon observed in her local and general condition.

In these three patients, you have seen the disease begin by sudden pains in the large joints, pains which after a variable period were accompanied by engorgement and puffiness. Then, the disease showing itself in paroxysms, the first affected joints became the seat of more decided pains and engorgements, while the other joints, large and small, were invaded by pain. By and bye, from pain and an altered state of the articular surfaces, all movement became impossible; and the patients were doomed to immobility of the limbs.

From the first manifestation of the disease, the patients became pale and feeble, though each paroxysm was accompanied by only a slight acceleration of the pulse, and was not attended by any loss of appetite. I never neglected the examination of the heart; and never did I detect in it any organic lesion. This fact is important, and is in accordance with general observation.

The affection is essentially chronic: whatever be done, its invasion is progressive; and if we do not intervene in the first attacks, the patients will sooner or later be condemned to complete helplessness.

The cases which I have now described to you are certainly insufficient to give you a complete acquaintance with the disease termed nodular rheumatism [*rhumatisme noueux*]: indeed for a general description of the affection, I should require to derive materials from all the works published on the subject since the beginning of the present century.

At the beginning of this lecture, I remarked, that nodular rheumatism is a disease seldom seen in hospitals, because from its being incurable, the cases are generally removed at once to the asylums for the incurable. Let me add, that it is a disease of rare occurrence:

it is most frequently met with in women, and in them it is most usual at the period when the catamenia cease to appear: nevertheless, it is met with in young girls who menstruate regularly, and also in young pregnant women. For more than thirty years, during which my attention has been directed to this disease, I have only once seen it in a male. The patient was between sixteen and seventeen years of age.

Sydenham, who devoted much of his attention to gouty and rheumatic affections, very correctly remarked, that nodular rheumatism is an apyretic form of chronic rheumatism, differing essentially from gout, although, like gout, it recurs in paroxysms, and may last a lifetime. Sydenham adds:—"It also, sometimes happens that the pains, after having continued for a long time with cruel severity, at last spontaneously cease. The affected joints, however, remain entirely incapable of motion. The joints of the fingers are, so to speak, turned over, and there are nodosities, as in gout, particularly on the inside of the fingers. The appetite is good; and in other respects, the general health of the patient is good."[1] Observe! Sydenham says that the joints of the fingers look as if they were turned over; and the autopsy of which I have given you the principal details, fully confirms the statement of the illustrious observer.

I am anxious to show you, that (as has been proved by my learned friend M. Lasègue) Sydenham perfectly recognised the fact that this form of chronic rheumatism, accompanied by deformity and pains in the joints, must be distinguished from gouty disease. It is to be regretted that Garrod and Fuller in England,[2] and Trastour in France,[3] should have retained for the malady now under our consideration the name of *gouty* rheumatism. It is right to state, however, that Garrod, in the last edition of his treatise on gout, proposes to substitute "rheumatic arthritis" for the term "gouty rheumatism."

It is not my intention, Gentlemen, to give you a retrospective review of all the works which have been composed upon *nodular rheumatism, nodes of the joints, mild asthenic gout*, and *primary chronic rheumatism:* let it suffice to inform you, that Fuller, Garrod,

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[1] Sydenham:—Opera Omnia. [Syden. Soc. ed. 1844, p. 260]: and Sydenham:—traduction de Jault, 1866, T. I, p. 422.

[2] Garrod:—Nature and Treatment of Gout and Rheumatic Gout. 2nd edition, 1863.

[3] Trastour:—Du Rhumatisme Goutteux: *Thèse Inaugurale;* 1853.

and subsequently Lasègue, Charcot, Trastour, and Plaisance have contributed, in elucidation of this subject, the best historical documents and the most valuable views in relation to the symptoms, pathological anatomy, and treatment of nodular rheumatism.[1]

Garrod and Fuller admit the existence of an acute form of gouty rheumatism commencing with intense fever and acute inflammation of several joints. Ere long, it assumes the chronic form; and there appear, at a later stage, the deformities which peculiarly belong to gouty rheumatism.

Generally, it is true, the disease shows itself at once in the chronic form. If, however, you carefully interrogate the patients, you will find that at an earlier period, they presented symptoms of acute or subacute articular rheumatism: in other cases, they will recall to their recollection, that in their youth, they had experienced muscular pains, pleurodynia, or lumbago. Some women will tell you that they have suffered from periodic megrim.

It is important to ascertain these antecedents, because they prove that nodular rheumatism may show itself in patients who had had previously different manifestations of the rheumatic diathesis.

The pain of nodular rheumatism is generally seated in the knees, wrists, and fingers. At the onset of the disease, the joints continue painful and swollen for only one or two days: then, after a lapse of a fortnight, three weeks, or five or six months, new attacks of pain occur. You will then find, that there is not only engorgement of the soft parts, but likewise swelling of the epiphyses. The bones have, at this stage of the disease, undergone a special modification in their nutrition, the result of which is swelling and attenuation of the osseous tissue of the epiphyses.

In the large joints, this osseous tumefaction is very marked, and is distinct from the tumefaction of the soft parts of the articular structures. The synovial cavity is often distended by hydrarthosis, and its thickened parietes seem to send prolongations beyond the joint, as you saw occur on the external aspect of the wrist of the woman who lay in bed 3 of Saint-Bernard's ward. Synovial bulgings are also observed upon the lateral aspects of the knees; but, after the lapse of a longer or shorter period, the soft, doughy nodosities are absorbed, and there only remain nodosities of the epiphyses.

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[1] Charcot: *Thèse Inaugurale;* 1853.

The articular deformities are specially conspicuous on the hand and wrist: the fingers present projections corresponding to the metacarpo-phalangeal articulations: the first phalanges are in a state of flexion, which renders the heads of the metacarpal bones still more salient. The middle phalanx is in a state of extension, and the first and third in a state of flexion. From this relative position of the metacarpal bones and phalanges, results a strange form of the hand, consisting in an alternation of broken lines and projections. The metacarpo-phalangeal joint appears as a protuberance on the back of the hand, while the articulation of the first with the second phalanx projects at the side of the palmar surface. The whole hand is generally in a state of semi-flexion, and inclined towards the cubital side.

The typical condition now described, in which flexion predominates, is the most common. It must be stated, that all the joints of the hand are not equally liable to be attacked. The index, middle, and ring fingers are often the seat of most marked changes, while the thumb and little finger remain nearly exempt.

There is another type, called extension, in which the first and third phalanges are extended, while the middle phalanx only is bent: in cases of this description, the projection of the heads of the metacarpal bones is situated at the side of the palmar aspect of the hand.

Finally, in several cases, as is convincingly demonstrated by a glance at the plates of M. Charcot's inaugural thesis, the fingers present the appearance of claws. In other cases, the deformities are of such a character as to baffle description. I must, however, remark that sometimes the fingers are altogether in a state of extension, and slightly separated from one another: it is particularly in this variety that the fingers resemble necklaces.

Though, the disease frequently seems to respect the thumb, leaving unimpaired most of its movements, it is otherwise with the great toe, which presents much deformity. The metatarso-phalangeal articulation projects very much, particularly inwards; and the great toe, pushed above or under the next toe, is in a state of extension or forced flexion. The other toes may present deformities analogous to those met with in the hand; but as a general rule, they are much less marked.

We must now pass in review the alterations of the large joints. The fore-arm and leg are usually in a state of semi-flexion: this

position, when once acquired, is generally persistent. The haunche and shoulders almost always preserve a certain degree of mobility. Observe, Gentlemen, that the superior extremities only may be invaded by the disease, the patients preserving the use of their lower limbs; but, on the other hand, it is not uncommon to see the vertebral column anchylosed in different parts, the patients being unable to stoop, or turn the head; and when the dorso-lumbar region is invaded, the afflicted are often bent forward and unable to straighten themselves. Finally, the temporo-maxillary articulation may be the seat of chronic rheumatism, setting in abruptly, as M. Charcot had an opportunity of observing in six patients of the Salpêtrière.

I have already said that the articular pain, acute in its form and recurring at intervals, may vary in each individual. These pains depend upon the morbid alterations of the synovial membrane, cartilages, and epiphyses.

Pains are sometimes experienced in the continuity of the limbs: they are of a spasmodic character, occur chiefly at the time of the articular attacks, and are readily distinguished by the patients from the pains which accompany muscular fatigue: they compare them to cramps. These pains are seated in the muscles of the thighs and legs, arms, and fore-arms. What is their cause? What is their nature?

You have observed, Gentlemen, that the patients know how to place pained limbs in positions which lessen the pain. In inflammation of the psoas, the patients lie on the side corresponding to the affected muscle, the thigh being semi-flexed on the pelvis. The muscle is thus relaxed, and there is no dragging of the inflamed fibres: but to produce this flexion, it is necessary that the muscles which flex the thigh on the pelvis should contract, or, that the patient, leaving the thigh immovable, should bring down the pelvis in such a way as slightly to bend the thigh. In muscular wry-neck, when the trapezius is affected with rheumatism, we see the sterno-cleido-mastoid muscle contract to obviate the necessity of traction by the pained muscles. In lumbago, to prevent the sacro-lumbar muscles from being dragged by the weight of the body, the oblique and straight muscles of the abdomen contract, so as to keep the trunk either immovable, or slightly bent forwards.

The unaffected muscles come to the aid of the pained muscles, to prevent traction of the latter, which might renew and aggravate the

pain. Likewise, when joints are the seat of pain, the muscles act in such a manner as to lessen the pain, and keep the joint at rest.

In a similar manner, an attempt has been made to explain muscular pains in nodular rheumatism, by the fatigue resulting from the instinctive tutelar contraction of the muscles. But opposed to this explanation is the fact, that the muscular contractions sometimes show themselves before the joints become much affected; and it is not unusual to see them go on increasing, long after the joints have ceased to be the seat of pain.

In these cases, then, the muscular contraction is independent of, and not the consequence of, chronic rheumatic arthritis. When the muscular and articular pains seem to progress together, we shall on the contrary be disposed to think that the articular pain is sometimes augmented by the spasmodic contractions of the muscles.

As to the cause and nature of these muscular pains, soon followed by persistent retraction, it is impossible to regard them as the consequence of the arthritis; and to me it appears more rational to look upon them as a manifestation of the general local state, a manifestation which may be absent, but which is sometimes a predominating phenomenon of the disease.

Hitherto, in nodular rheumatism, no lesion of the central or peripheral nervous system has been found: but in a disease in which pain is an element which plays so important a part, even beyond the affected joints, is it not a justifiable hypothesis, that the peripheric nervous system is so injured as to cause the contractions? In 1853, M. Charcot doubtingly suggested the hypothesis that the contractions might be dependent on reflex action, his idea being that the seat of the excito-motor action was in the affected joints. This hypothesis must be rejected, at least in the cases in which muscular pain precedes the lesion of the joint, or continues after the joint has ceased to be painful.

I am inclined, therefore, to believe, rather that the muscular pain, soon followed by retraction, persistent, and independent of the muscular lesion, ought to be looked on as a manifestation of the disease. Again, this manifestation probably has its seat in the nervous trunks which supply one class of muscles, or in the ramifications of the nerves of each of the contracted muscles. Afterwards, when I come to discuss the nature of nodular rheumatism, we shall see whether this nervous manifestation, as well as the arthritis, is rheumatic.

Gentlemen, let me now return to the strictly clinical part of my

lecture. When the malady is perfectly confirmed, that is to say, after it has lasted several months, the inflammation usually extends by several attacks to a great many joints; and then we seldom see retrocession of the disease. On the contrary, its course is generally progressive: joint after joint is successively attacked, and the deformities become more and more decided. The joints are ankylosed: and when an attempt is made to move them, the hand can detect frequent crepitation, which is produced by the fibrous parts being torn, and by the rubbing of the eroded osseous or cartilaginous surfaces. Moving the joints always occasions great pain: and the rupture of the ankyloses has never given favorable results.

I ought, however, to remark, that under the influence of constitutional treatment, it sometimes happens, not only that the disease does not progress, but that the arthritis is so greatly modified that on anatomical examination it is no longer possible to detect any, save slight, articular lesions. This occurred in the basket-maker whose case I described to you.

Be the case what it may, when the principal joints of the superior and inferior extremities have been the seat of the disease, to move is almost absolutely impossible; and the patients are obliged to remain either in the horizontal position or seated.

The manner in which the joints are invaded is a point to which M. Charcot has very judiciously called attention. In nodular rheumatism, *symmetry* is the rule: that is to say, the homologous articulations are simultaneously attacked, the exceptional cases being very few. This fact has been stated by Budd and Romberg.

Nodular rheumatism does not manifest itself only in the joints and muscles: during the course of the disease, there are observed sciatic pains of variable duration and intensity. In fact, we meet with a particular class of lesions to which attention has only been directed within the last few years. I remarked to you that, generally speaking, nodular rheumatism has no action on the heart: valvular lesions, in truth, are scarcely ever met with in this class of rheumatic persons: sometimes, however, by auscultation, we can detect blowing and rasping sounds, which seem to have their seat in the mitral and aortic valves. In 1846, Romberg, and at a later date, Trastour, Charcot, and Peter, observed undoubted examples of organic affection of the heart in individuals having nodular rheumatism, and who had never suffered from acute articular rheumatism. Moreover, autopsies have shown that the pericardium may

also be the seat of very extensive inflammatory lesions. In four out of nine autopsies made by Dr. Cornil at the Salpêtrière, Dr. Charcot found pericarditis. The former of these physicians has reported two cases in which there was evidence of acute pericarditis: anatomical examination proved that in these cases death was the result of this final complication of the rheumatic diathesis.

Landré-Beauvais and Pinel have observed pulmonary complications: their patients (patients at the Salpêtrière) succumbed under that ataxo-adynamic state, so common in the pneumonia of the aged. But although these pulmonary complications may be considered as diseases independent of the rheumatic diathesis, I do not think that a similar opinion is tenable in respect of pleuritic complications, particularly when pleurisy with effusion occurs simultaneously with pericarditis, and when the latter presents all the characters of an acute inflammation.

Patients affected with nodular rheumatism often become albuminuric during the latter years of life, a clinical fact for which we are also indebted to the work of Dr. Cornil.[1] Albuminuria, it is true, is then, frequently, only a symptom of chronic inflammation of the bladder and pelvis of the kidneys: in some cases, however, it has been shown by the autopsy, that there existed the alterations of the kidneys characteristic of Bright's disease.

Let me say, that you ought henceforth to examine carefully patients affected with nodular rheumatism to ascertain whether there exist any cardiac, pleural, or renal complications attributable to the rheumatic diathesis.

You know, Gentlemen, that in cases of acute articular rheumatism, it is not unusual to observe the cerebral symptoms described under the generic name of "cerebral rheumatism." In previous lectures, I have addressed you at length upon the localisation of rheumatism in the encephalon. It is a complication seldom met with in nodular rheumatism. I ought, however, to remind you that Dr. Vidal has related the case of a man aged seventy-three, who died from a cerebral affection, after having had symptoms of nodular rheumatism for several years.[2]

Let me also remark, that M. Charcot has seen, coincident with

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[1] Cornil :—Mémoir sur les Coincidences Pathologiques du Rhumatisme Articulaire Chronique. [*Comptes Rendus des Séances et Mémoires de la Société de Biologie, 4me série, T. i, année*, 1864.]

[2] Vidal (E.) :—Thèse Inaugural, 1855.

nodular rheumatism, certain affections of the nervous system, such as shaking palsy—tremors at least—and locomotor ataxy.[1] But such cases are very unusual; and there is no proof of there being any correlation in the pathogenesy of these nervous diseases and nodular rheumatism.

Nodular rheumatism is not immediately dangerous to life, when no complication supervenes. The patient who first excited the attention of Haygarth, and suggested his work on nodosities of the joints, was ninety-three years of age. In the dormitories of the infirmary of Salpêtrière, you will see a great many old women who have been for years affected with nodular rheumatism. They are infirm rather than unwell; that is to say, they have incurable lesions resulting from nodular rheumatism, but the disease itself is no longer in an active form. They are, however, placed in unfavorable hygienical conditions by the immobility to which they are condemned. They are almost always either lying down or sitting in an arm chair, the appetite is poor, nutrition is badly performed, and they acquire a greater aptitude to contract the diseases of old age. In those in whom chronic has preceded the attack of subacute rheumatism, it is not uncommon for the articular pains to reappear accompanied by fever: under such circumstances, acute cardiac complications may occur.

Pulmonary phthisis is another organic change which terminates the life of patients suffering from nodular rheumatism. Bear in mind, Gentlemen, the case of the basket-maker who for many years had suffered but little from his nodular rheumatism, and who died with all the signs of rapid pulmonary phthisis. Numerous observers have noticed the existence of pulmonary tuberculisation in rheumatic patients. I do not mean to say, Gentlemen, that phthisis is necessarily a manifestation of the diathesis which induces nodular rheumatism, although there is a rheumatic phthisis; but I wish to call your attention to an unfavorable complication which may originate, to a certain extent, in immobility and a forced sedentary condition.

The anatomical articular lesions have been studied with great care. The affected joints present numerous traces of chronic inflammation: they are deformed, the deformity being due, as I have said, to alterations of the osseous, synovial, or periarticular cellular tissue.

[1] Charcot:—Leçons sur le Rhumatisme Articulaire Chronique, published in the *Gazette des Hôpitaux*, 1867.

The articular epiphyses are thick, their original structure is augmented in volume, and, in the form of stalactites, there are new productions of osseous tissue. These productions are generally seated at the peripheric line of insertion of the cartilage. Within the joint, we can sometimes detect osseous union of the surfaces in apposition.

The cartilages present various alterations. They are attenuated, eroded in some places, or velvety. The latter change consists in a disintegration of the cartilage, so as to give it the appearance of Utrecht velvet. The attenuation is occasionally so great in some places as to constitute real ulcerations of the cartilage, showing the osseous tissue at their bottom.

The epiphyses are at the same time thick, spongy, and very attenuated: large rings filled with fatty matter are visible, and the attenuated tissue is easily cut with the scalpel. The whole synovial membrane of the joint is that which presents the most interesting alterations, alterations evidently demonstrating an inflammatory action. Sometimes there is a very intense vascular injection at the edges of the synovial membrane, which may present morbid prolongations, extending from one articular surface to the other. These prolongations are the origin of the cellular fibres often observed in the joints; and as they may become the seat of cartilaginous and calcareous products, they explain the presence of the intra-articular foreign bodies sometimes met with in nodular rheumatism. But it is a fact deserving of notice, that we never find pus in the joints, and seldom even an excess of synovial fluid. This form of arthritis has been called "dry arthritis."

In describing to you articular nodosities, I said that they were never osseous, and that the soft parts shared in producing these deformities. In fact, anatomical examination shows that the cellular tissue which lines the synovial cavity may sometimes attain a great development. I have seen these fibro-cellular deformities disappear under treatment: at other times, however, the hyperplasia has been so great as to leave marked permanent deformity. Moreover, the thickenings of the cellular tissue, by contracting adhesions with the surrounding parts, cause fibrous ankyloses of such a character that when the ligaments are cut, the joint still retains its anomalous position.

The inflammatory action seldom attacks the articular ligaments; and we never find deposits of urate of soda in them or in the peri-

articular cellular tissue. Neither extra-articular tophus, nor deposits of urate of soda in the cavity of the joints are ever met with in nodular rheumatism.

The muscles, I have said, are sometimes retracted, and in such cases, their tendons act like cords which maintain the joints in their abnormal position. The immobility to which many rheumatic patients are condemned explains the fatty degeneration sometimes observed in the muscular fasciculi.

Such, Gentlemen, are the principal lesions met with in nodular rheumatism. I ought, however, to add, that in certain cases, this disease leaves scarcely any specially characteristic alteration of the joints; that is to say, that the synovial membrane and cartilages do not present any of the lesions which I have been describing. There then remain only acquired articular deformities, partial luxations, and nodosities of the epiphyses. Probably, in those cases, the diathesis has been long quiescent, and under the influence of an improved nutrition, there has taken place reparation of the changes in the cartilages and synovial membrane.

I shall be brief upon the other anatomical lesions of nodular rheumatism. Those, however, which have been detected in the heart and kidneys seem so important that, without going into long details, I must at least mention them. Garrod and Fuller, in describing the acute form of nodular rheumatism, have called attention to the point of transition between the acute and the suddenly invading forms of rheumatism. All observers have been careful to seek for the cardiac lesions which are found in nodular rheumatism. I have told you that as a general rule chronic nodular rheumatism is not accompanied by affections of the heart; but I have also stated that heart diseases have been sometimes met with, and that autopsies have proved that in chronic rheumatism there may exist acute pericarditis with fibrinous deposits on the surface of the pericardium, and chronic pericarditis with complete adhesions of the serous membrane of the heart. In treating of the nature of nodular rheumatism, I shall employ those anatomical facts which decisively connect the nodular malady with the rheumatic diathesis.

Drs. Charcot and Cornil have found pretty frequently the lesions which belong to albuminous nephritis; which lesions differ from those met with in gout, and (as Dr. Charcot remarks) are constantly found in cachectic persons.

Gentlemen, what is the etiology of nodular rheumatism? Most

authors assign an important part to damp cold. It is quite true that many of the patients have lived for a long time in damp places. It is true that the poor, who are often exposed to cold, are more subject than the rich to nodular rheumatism. It is likewise true that in certain damp countries, it is so common as to be almost endemic. We must also, however, bear in mind that a special individual disposition is required to enable the moist cold to determine the production of nodular rheumatism. Bad hygienical conditions have likewise their influence: they debilitate the system, and render it more impressionable to the causes of the disease. A similar result is produced by great bodily fatigue, profuse hemorrhages, and frequent pregnancies. Bean, while he admitted the undoubted influence of damp cold, considered that mental worry and dyspepsia had something to do with producing nodular rheumatism. He relates the case of a lady who, living in easy circumstances in a residence having a complete southern exposure, consulted him for articular pains with deformities of the joints. In this case, there seemed to be no damp cold; but on carefully interrogating the patient as to her antecedents, he discovered that the lady, in her youth, had lived in a very damp region, and had, when about fifteen or sixteen years of age, suffered from her first attacks of nodular rheumatism. Having soon afterwards removed to a situation where the hygienical conditions were more favorable, she continued thirty years without articular pains, but under the influence of deep grief, she became the subject of dyspepsia. This lady had had almost complete loss of appetite, and had been losing flesh for some months: she soon afterwards became rheumatic, the disease which had slumbered for thirty years waking up.

It is not unusual, Gentlemen, to observe similar periods of arrest in the manifestations of nodular rheumatism. You ought always carefully to inquire whether or not the patients, at some anterior period, have suffered from articular pains, of which they may have almost entirely lost all recollection.

Nodular rheumatism, so rare in men, is so common in women that in the Salpêtrière, according to the statistics of MM. Charcot and Vulpian, from a fifteenth to a twentieth of the population of that asylum are sufferers from it. Nodular rheumatism generally has its beginning at the time of the establishment or cessation of menstruation; but sometimes also during pregnancy. Garrod believes that the ovario-uterine functions have no special action in

originating nodular rheumatism, and act only when they are a cause of debility. Gonorrhœa, when it localises itself in a joint is sometimes the cause of calling forth and generalising nodular rheumatism. Garrod gives a case in point: and in 1832, when acting at the Hôtel-Dieu for Professor Récamier, I had as a patient a young groom, most of whose joints had been invaded by nodular rheumatism, consequent upon an attack of gonorrhœa.

Let us now study the nature of nodular rheumatism. Gentlemen, I have long taught that nodular rheumatism is neither gout nor rheumatism. To prove that gout has nothing to do with rheumatism, it is sufficient to remark, that the persons affected with the latter present neither the condition nor the symptoms of gouty maladies. You have seen that nodular rheumatism chiefly attacks women, whereas gout almost exclusively attacks men. Gout is chiefly a disease of rich men, and of men who have lived luxuriously, and *suddenly cease*, as Sydenham remarks, to lead an active life. The conditions under which rheumatism originates are totally different; as it seldom attacks persons who are not enfeebled by some cause. Moreover, the gouty articular deformities are extra-articular and characterised by tophaceous formations of urate of soda, while, at the same time, the urine is often charged with uric acid. I have often, but always fruitlessly, sought for tophaceous concretions in our patient of Saint-Agnes's ward: the nodosities, I again repeat, which were so considerable, were wholly constituted by the projection of the articular portion of the bones, and were smaller than could have been supposed by the external appearance. The serum of the blood contains no uric acid as in nodular rheumatism. Nodular rheumatism, therefore, is not gout. Women, however, after the cessation of menstruation, when they assume some of the characteristics of the male sex, may present gouty manifestations. These remarks still retain all their original value: nodular rheumatism must not be confounded with gout, there being very many morbid symptoms to distinguish the one from the other.

Is it the same with rheumatism? May not the articular nodosities be consequences of the rheumatic diathesis? There was a time when I should have replied in the negative to this interrogation. It was, in fact, a doctrine generally accepted by myself and others, that nodular rheumatism was not a febrile disease, that the patients never had rheumatic affections of the heart, or pleuræ, nor metastases to the brain, stomach, or intestines; and according to the views entertained

by me, as well as by all others, "gouty rheumatism" was neither gout nor rheumatism. I was no more disposed than Garrod and Fuller to consider it a hybrid disease originating in gout and rheumatism: and with them, whilst I was unable to say what the disease was, I was equally unable to say what it was not. I had "learned from clinical experience, that the circumstances under which gouty rheumatism showed itself, the inveterate obstinacy of the symptoms, the peculiar alteration of the joints, and the remedies most useful in the disease, all point to its being intimately associated with some peculiar constitutional alteration."[1]

These conclusions are still tenable. However, the fever, the acuteness of the pains, and the generalisation of the disease over all the joints of the hand and wrist, as observed in some cases of nodular rheumatism—the acute form of the malady (which we have sometimes an opportunity of witnessing at the commencement), afterwards becomes chronic—the acute manifestations which occur in the heart and pleuræ, in the course of the chronic form testify to the existence of a rheumatic diathesis, which will show itself at different periods of life by certain morbid alterations always seated in the fibro-serous tissue of the joints, heart, and pleuræ. Moreover, there have sometimes been observed in the paroxysms, cerebral disturbance, and disturbance of the digestive organs, apparently alternating with the articular pains. Finally, if the pathological antecedents of the patients be analysed, it will sometimes be found that there were indications of a rheumatic diathesis in their progenitors, and that the patients will state that they themselves have, anterior to the existing attack, experienced morbid symptoms referable to a diathesic condition, such as megrim, eczema, diseases of the eyes, and successive attacks of erysipelas, which according to some physicians—M. Bazin in particular—are often attributable to the rheumatic diathesis.[2] Again, are not the pains and muscular retractions observed in nodular rheumatism the result of the morbid cause, rheumatism, acting pathogenically upon the muscles and nerves at the same time as upon the joints?

I do not believe, however, that we are yet in a position to arrive

[1] Garrod:—On Rheumatism, Rheumatic Gout, and Sciatica. 3rd edition, p. 345. London: 1860.

[2] Cornil:—Mémoire sur les Coincidences Pathologiques du Rhumatisme Articulaire Chronique, lu à la Société de Biologie. [*Comptes Rendus des Sciences, et Mémoires de la Société de Biologie, 4me Série, T. i,* 1861.]

at any exact, precise conclusions in relation to this point. Still, I have considered it my duty as professor to lay before you the facts and arguments which appear to have modified the opinion of several clinical observers as to the nature of nodular rheumatism.

The discussion into which I have entered renders it unnecessary for me to speak at any length on the subject of diagnosis. It is impossible to confound nodular rheumatism with gout. There are great differential characters; and they are particularly marked when we compare the local affections of the two diseases. The articular deformities of nodular rheumatism bear no resemblance to those of gout. In rheumatism, they are not tophaceous concretions, but are produced by the projections of the ends of the bones, augmented in volume, encrusted by osteophytes, forming irregular angular excrescences: they are also in part produced by the retraction of certain muscles and the atrophy of their antagonists. The joints, partially dislocated, the articulating surfaces of which have lost their normal relations, become fixed in the vicious position which they have assumed: though we may hope to arrest the farther progress of these ankyloses, we cannot reduce those already formed. The aspect of the fingers turned back upon their external side, pushed backwards and resembling long pods have no similarity to gouty fingers.

In nodular rheumatism, though the small joints may be affected, it is not, as in gout, the articulation of the great toe of one foot which is first affected, but more frequently, the metacarpo-phalangeal articulations of the index and middle finger in both hands, in conformity with the law of symmetry pointed out by Dr. Charcot. This law of symmetry certainly does not exist in gout.

In nodular rheumatism, the feet and inferior extremities are not first affected as in gout. In both our patients, you have seen, that although the knees were first attacked, the feet were not attacked till long after the hands. Generally, the malady first shows itself in the hands. In gout, as a rule, all the joints do not at the same time suffer with equal severity: in rheumatism, all are seized in succession, and continue to be affected, without excepting the vertebral and maxillary articulations.

Nodular rheumatism, insidious in its beginning, declares itself by pains, which are less characterised by violence than by constancy, very different as you know from what occurs in gout: when once it sets in, it has an onward progress marked by exacerbations.

It is much more common than gout in women. Like acute articular rheumatism, its development is very much under the influence of immediately exciting causes such as cold, particularly damp cold. It is very doubtful whether heredicity has any share in producing nodular rheumatism.

It is a very important fact, that in nodular rheumatism we do not find symptoms characteristic of the uric diathesis, which is nearly always associated with gout—the *uric* diathesis, which we must be careful not to confound with the *gouty* diathesis, as some have done.

The remarks which I have made, Gentlemen, upon the tenacity of the symptoms, the paroxysms of the disease, the onward progress, the articular deformities, and the persistent contractions sufficiently prove that medicine cannot suppress attacks of nodular rheumatism. However, hygienics, and sometimes different forms of treatment, may impede the onward progress of the disease, render longer the intervals between the paroxysms, and prevent the invasion of other joints. A general, profoundly modifying treatment is the only means of attaining a satisfactory issue.

Thirty years ago, when doing Professor Récamier's duty at the Hôtel Dieu, there was admitted to my wards, a young lad to whose case I have already alluded when treating of the etiology of nodular rheumatism. This young man, consequent upon an attack of gonorrhœa, was seized with pain in very many joints, many of which gradually became stiff and deformed.

At that period, there existed a much stronger disposition than at present to believe that gonorrhœa might be the origin of syphilis; and as I then held that pox had a share in causing alterations in the joints, I subjected the patient to antisyphilitic treatment. Sublimate baths were ordered to be taken three times a week, and to my great satisfaction the attacks became less acute and less frequent, and finally completely disappeared. So much was this the case that the joints recovered freedom of movement, and ceased to present any appreciable deformities. It is true, that in this young man the malady was incipient, and that the deformities were chiefly located in the soft structures of the joints.

I do not hesitate then to prescribe the same baths in new cases of rheumatism, but I confess that I do not always obtain the same success from their use. Be that as it may, sublimate baths, even irrespective of the existence of any syphilitic diathesis, have rendered

me great service: and I have continued to prescribe them, taking care to discontinue them, when they did not produce satisfactory results. You saw the beneficial effects they produced in the case of the woman who occupied bed 3 of Saint-Bernard's ward. Mercurial preparations, on account of their action on the osseous system, may be administered internally, provided recourse be had at the same time to stomachic remedies, and in preference to all others to powder of cinchona. Preparations of colchicum have always produced mischievous consequences, because they cannot be long continued without causing disturbance of the stomach and intestines. They have now been entirely abandoned in the treatment of nodular rheumatism.

During the last few years, Dr. Noël Gueneau de Mussy, having remarked that most mineral waters which act beneficially in rheumatism, contain arsenic, has proposed to substitute baths of the subcarbonate of soda and the arseniate of soda for the sublimate baths. This mode of treatment has been made the subject of a memoir to the Academy of Medicine by my hospital colleague. In the patients in whom nodular rheumatism is still acute, baths containing 100 grammes of subcarbonate of soda and one gramme of arseniate of soda, produce simulating effects which contra-indicate their use. In these cases, Dr. N. Gueneau de Mussy employs the arseniate of soda only in the proportion of from one to five grammes in a gelatinous bath.[1] Baths of arseniate of soda have sometimes, though seldom, induced slight toxic phenomena: they may be employed for several months without causing any serious symptoms.

I have not neglected to employ arsenical baths; and yet I have been obliged to discontinue them from their not seeming to lead to much improvement in the state of the joints.

When you wish to prescribe arsenic internally, have a clear conception of your doses, and prescribe in such a manner that no error of a patient can cause his death. Prescribe—as I have done for many years—five centigrammes of the arseniate of soda to 120 grammes of water: of this solution, order a teaspoonful to be taken morning and evening: and do not increase the dose, till you are certain of the tolerance of the stomach for the medicine. If you prefer the form of pill, order pills of arsenious acid each con-

[1] Noël Gueneau de Mussy:—Du Traitement du Rhumatisme Noueux par les bains arsénicaux. [*Bulletin de Thérapeutique* for September, 1864.]

taining two milligrammes: four, five, or six of such pills may be taken daily. These arsenical medicines ought to be taken at meal times: it is the best means of securing rapid absorption, and avoiding irritation of the stomach.

Gentlemen, there is no specific for nodular rheumatism. Almost every individual patient requires his own special remedy; and, probably, that is because nodular rheumatism bears an intimate relation in its manifestations to an individual diathesic state, which may demand mercurial, or arsenical preparations, or simply alimentary and pharmaceutical tonics.

There is, however, a medicine, which although it cannot be looked upon as a specific, appears to act beneficially with more uniformity than any other upon articular nodosities: I refer to iodine.

My friend and learned hospital colleague, Dr. Lasègue, in 1852, when my *chef de clinique*, thought of employing iodine. He had, he said, "obtained beneficial results from this medicine in the least rebellious forms of osseous rheumatic swellings."

In Dr. Lasègue's opinion, nodular rheumatism is a form of rheumatism. He gave iodine with complete success to a patient affected with nodular rheumatism. "This man, who occupied bed 11 of Saint-Agnes's ward, had all the joints of the feet and hands deformed: the wrists, elbows, and shoulders were slightly attacked: the knees were swollen and painful, and even the articulations of the cervical vertebræ were not spared. The patient was forced to remain almost entirely in bed. He was treated by tincture of iodine: at an after period, in addition, as a calmative and auxiliary resolvent bags of dry hot sand were applied. After some weeks, the affection was arrested in its progress: at the end of a month, some joints had recovered their mobility: the cure proceeded slowly, but continuously, and after four months of treatment by iodine, the patient was performing the laborious duty of attendant on the sick in an hospital."

This quotation, which I take from M. Lasègue's memoir on the subject, published in the *Archives Géuérales de Médecine* for August, 1856, leaves no room for doubt as to the therapeutic value of iodine in cases of nodular rheumatism. Add to that statement the fact, that, since 1852, M. Lasègue and I have often used this remedy with decidedly beneficial results.

The case of the woman who lies in bed 3 of Saint-Bernard's ward is another to be added to the list of ascertained recoveries. Have

recourse, therefore, Gentlemen, to the tincture of iodine: use it, and you will often have occasion to congratulate yourselves on having employed it. But to obtain success with this medicine, you must know how to manage it, remembering at the same time, that every chronic disease demands a long course of treatment. Order the iodine to be taken daily at the morning and evening meals, prescribing, in the first instance, ten drops of the tincture, in sherry wine or sugared water, as recommended by M. Lasègue. You may progressively augment the dose to one, two, three, four, five, or six grammes, without occasioning any inconvenience to the stomach; and more surprising still, you will often be astonished to discover that digestion goes on with remarkable activity. How does tincture of iodine act upon nodular rheumatism? I cannot believe that it possesses a specific action, as it does not produce equally beneficial results in all patients. I am inclined to think that its action is complex; that is to say, that it acts upon general nutrition by assisting digestion, and that in this way, perhaps, it exerts an indirect action, in some patients, upon articular engorgements.

We have at our command then a certain number of medicines, which act as general alteratives, which may be of great use in nodular rheumatism; but with a view to promote resolution of the articular inflammation and assuage the pains of the stomach, it is useful to employ douches of hot sand. That is a resolvative and calmative measure of great power, provided it be judiciously employed. You must plunge the affected parts into hot sand, or allow the sand as hot as can be borne to fall on them. The patients then complain of a very painful sensation of burning. You can, however, always discover, by the thermometer, the degree of heat which each patient can bear. This may be from 60° to 70° centigrade. Douches or local hot sand baths ought to be given three times a day, lasting for one or two hours each time. It is important that the sand be kept at the same temperature: this can easily be done, because sand cools slowly, and can readily be replaced when it begins to get cold. By attending to this rule in the use of the hot sand, the patients soon experience decided relief; and it is easy to detect a rapid diminution in their articular engorgements.

LECTURE LXXXIV.

ACUTE ARTICULAR RHEUMATISM AND ULCERATING ENDOCARDITIS.

Very great frequency of Acute Articular Rheumatism.—A Diathesic Disease.—Peculiarly an affection of the Fibro-Serous Tissue.—Rheumatism of the Large and Small Joints.—Primary or Secondary Rheumatism.—Rheumatism of the Heart, the origin of organic diseases of the organ.—Rheumatism of the Pleuræ, Lungs, and Membranes of the Brain and Spinal Marrow.—Rheumatic Metastases.—No Specific Treatment for Acute Articular Rheumatism.—Rheumatic Ulcerative Endocarditis.—Ulcerative Endocarditis Independent of the Rheumatic Diathesis.—Atheromatous Endocarditis.—Visceral Emphraxis.—Capillary Embolism.—Alteration of the Blood consequent upon Ulcerative Endocarditis.—Typhoid Symptoms.

Gentlemen:—We have now been engaged in the study of gout and nodular rheumatism: and at the beginning of the year, I devoted several lectures to the clinical study of cerebral rheumatism. To-day I wish to discuss acute articular rheumatism, without intending, however, to give you a complete systematic description of the disease. Let me remark, that you will not see the disease at the bedside of the patient always presenting itself with the retinue of symptoms and complications described in works on pathology. At the close of the lecture, I shall call your attention to a newly described complication of articular rheumatism to which the name *ulcerative* endocarditis has been given. Let me here remark, however, that this modification of endocarditis may occur irrespective of any rheumatic manifestation.

Hardly a month passes during which you have not an opportunity of studying rheumatic arthritis in our clinical wards. The action of cold, particularly when the surface of the body is covered with sweat, is a

very frequently determining cause in persons of the rheumatic diathesis. When you interrogate the patients at the hospital, nearly all of them will tell you that they have been struck with cold, either when hard at work or immediately after discontinuing severe labour. Some will say that they have been exposed to a draught of air, and that they have felt the whole body enveloped in cold. Others will tell you that they have been exposed to cold when passing from a hot to a cold damp atmosphere. In the evening, in the night, or during the next day, after experiencing these sensations, the patients are seized with shivering, succeeded by great heat and perspiration, and at the same time, nearly always, with acute fever and profuse sweating.

Rheumatic arthritis is continuous, hardly ever presenting paroxysms. The pulse is rapid, large, and resisting. The sweating is always profuse, and when the patients are uncovered, you can see the perspiration collected in little drops over nearly the whole body. The perspiration has a peculiar odour, such as is hardly ever met with in other febrile diseases. You will also be struck with the paleness of the complexion: the face itself is often of a dull blue, and this general pallor is in strong contrast with the bright red hue of the skin.

There is loss of appetite: the tongue is white, but only slightly saburral: there is no tendency to vomit: constipation is the rule in such cases. The only complaint made by the patients is of pain in the joints. You will observe that they assume the dorsal decubitus, and remain motionless in bed, in dread lest the acute pain in the articulations be aroused by the slightest movement. The pain often first declares itself in the knees and insteps: afterwards, at the end of a period varying from some hours to three or four days, we find numerous joints invaded by the rheumatic inflammation. The pain has sometimes an upward progress: that is to say, that it ascends from the insteps to the knees and haunches, or from the wrists to the elbows and shoulders. It is not unusual for the disease to declare itself, in the first instance, only upon one side of the body, and subsequently, to invade, in similar order, the joints of the other side.

This course of the disease has never seemed to me to have any notable importance in relation to its duration and termination; but it is otherwise when the rheumatism simultaneously attacks the large joints, the wrist, the insteps, and, even also, it may be, the small articulations of the hands and feet. When the latter

are invaded by acute rheumatism, and particularly when that invasion occurs at the commencement of the disease, one may conclude almost with certainty, that the articular rheumatism will be of long duration; and consequently, that the disease will have a degree of gravity relatively greater than in other forms of articular rheumatism. In fact, the manifestations in the hands and feet testify to the greater power of the disease, which in less severe cases generally remains limited to the large joints.

In acute articular rheumatism, all the joints, large and small, may be attacked in succession. The articulations of the clavicle with the sternum and acromion, the maxillary articulations, and those of the vertebral column, may be seats of rheumatic pains.

Rheumatism, then, has a special predilection for the joints, but, in general, it is the large joints which are most commonly invaded. Gentlemen, I have frequently pointed out to you the characters of rheumatic arthritis. At the bed of the patient, we have seen that the affected joints were swollen and painful. The swelling is in the tissues which surround the joints; but this swelling is principally an intra-articular effusion. You cannot put your hand on the joint or cause the slightest movement of the articular surfaces without occasioning very severe pain. By applying the hand gently to the diseased joints, a very appreciably increased temperature can be detected. In a very few cases, redness may be remarked around the large joints, as is seen in arthritic affections of another kind. In rheumatism, there is a white swelling of the superficial tissues, but when the rheumatism is in the wrist, hand, instep, or small joints of the foot, the swelling has a rosy hue. In the course of the numerous tendinous sheaths of the wrist and instep, we see red streaks indicating the part which the sheaths have in rheumatic inflammation. In these cases, the wrist and hand are deformed. All the fingers are immovable, swollen, separated from one another, and have the shape of large spindles. The dorsal surface of the hand is rounded: there exists a state of true acute œdema, and between the hand and forearm, there is perfect continuity without any line of demarcation. Similar remarks are applicable to the foot, when it and the tibio-tarsal articulation are simultaneously invaded.

When hand and foot are the seat of rheumatic inflammation, the disease may remain stationary there for a long time, giving rise to the fear that the articular tumefaction may become the beginning of a white swelling. This serious complication, however, is seldom

observed except in scrofulous and tuberculous subjects. It is much more usual to see the small joints retain a very great stiffness, which can only be got rid of by producing, several times a day, slight movements of flexion and extension in the rigid fingers.

When the rheumatism has been seated only in the large joints, it is usually found that the local inflammation lasts only for a few days—from three to seven days. It often happens that the pain, inflammation, and effusion disappear from one day to another, but in such cases, other joints are seized. The rheumatic matter, to use Van Swieten's expression, has a very migratory tendency; and it is not uncommon to see it return to the joints which it had abandoned, as if it could not exhaust its action without either attacking in succession a greater or less number of joints, or returning several times to the same joints.

Rheumatism seldom assails any of the articular tissues except the fibro-serous, as is proved by microscopical examination; and it frequently leaves no other anatomical lesion behind it than synovial effusion. This constant tendency of rheumatism to affect the fibro-serous tissue of the joints sometimes causes rheumatism, either primarily or secondarily, to attack the fibro-serous tissue of other organs; and the preference of the disease for that tissue explains the affections called rheumatic metastases.

I shall afterwards recur to these alleged complications of rheumatism. First of all, however, I wish to make some clinical remarks upon the manifestations of rheumatism in the sanguineo-vascular system.

Gentlemen, you are acquainted with the important works of MM. Bertin and Bouillaud upon rheumatic endocarditis and pericarditis. In his treatise on diseases of the heart, and also in his treatise on articular rheumatism, my learned colleague of the Faculty has set himself to demonstrate the law of coincidence of inflammation of the heart with articular rheumatism. According to the celebrated professor of La Charité, in acute, violent, generalised articular rheumatism, *it is the rule* to meet with coincident endocarditis, pericarditis, or endopericarditis. Gentlemen, there is no one more disposed than I am to render justice to the great labours of Professor Bouillaud, yet here I must state that an attentive study of the heart in a certain number of cases of acute articular rheumatism has not enabled me in all of them to discover symptoms of endocarditis, pericarditis, or endopericarditis. In fact, in several

rheumatic patients who had acute fever with swollen and painful joints, I could not detect by percussion the dulness caused by effusion, nor by auscultation the friction sound of pericordial inflammation. A similar remark is applicable to the symptoms of endocarditis; for in a large number of cases of acute multiarticular rheumatism, I have not been able to hear a blowing sound at the apex of the heart: I have more frequently heard a blowing sound at the base, but it was a soft sound, and it extended into the vessels of the neck with the same softness; from which circumstance, and the fact that rheumatic patients are all very anæmic, I am inclined to connect this blowing sound with anæmia. I think then, that the law, as laid down by Bouillaud, in relation to the coincidence of acute cardiac lesions with rheumatism is not so absolute, as he has assumed; but while I say this, let me add, that in a great many cases, I have been fortunate enough to be able to verify fully the truth of the law of coincidence so well established by him.[1]

Be that as it may, Gentlemen, you ought always most carefully to search for the cardiac symptoms which characterise acute lesions of the heart in articular rheumatism; and often, I repeat, you will have an opportunity to confirm by your own observation the law of coincidence laid down by Bouillaud. Recollect, however, that this coincidence may be wanting in acute polyarthritic rheumatism.

The rheumatic diathesis manifests itself upon the fibro-serous tissues of the heart in virtue of the same title by which it attacks the similar fibro-serous tissue of the joints. And, again, in the same way that all the joints are not invaded by rheumatism, it may happen, in a certain number of cases, that the heart remains intact. It would be interesting to study the influence of occupations upon determining the seat of rheumatic affections. And were it possible, by comparative examination, to prove that the employments which occasion most fatigue to certain joints are those most frequently affected by rheumatism, should we not be justified in admitting a determining local etiology? A similar remark might probably be made in respect of the heart, an organ which is not equally susceptible in all rheumatic persons. Is it not well known that in healthy men the moral emotions and fatigue go to the heart, and that in others, it is protected from every moral and physical disturbance? In the former, the rheumatic diathesis, so to speak, preferentially

[1] Bouillaud:—Traité Clinique du Rhematisme Articulaire, et de la Loi de Coincidence des Inflammations du Cœur avec cette maladie. Paris: 1840.

strikes the heart. In support of these general considerations upon the localisations of the acute rheumatic diathesis, I ought to remind you that in my lectures upon cerebral rheumatism, I have been careful to demonstrate to you that rheumatism attacks the membranes of the brain, particularly in men whose brain had been previously the seat of inflammations proceeding from various causes. In the antecedents of my patients, I have in fact been able to trace the etiology of their cases in their intellectual fatigues, mental distresses, alcoholic excesses, or in certain anterior mental dispositions which had produced a change in the organ of thought. Two of my patients had previously given evidence of insanity, another had been addicted to alcoholic excesses. Some patients had shown a congenital or acquired cardiac idiosyncrasy, and were consequently more disposed than others to endocarditis and pericarditis.

These remarks, however, Gentlemen, must be made under reserve, and whatever confirmation they may one day receive from your own observation, do not forget that rheumatism often attacks the heart, and is often the primary cause of the organic lesions to which the complex term of "aneurism of the heart" was formerly applied, and the varieties of which we now describe under the names of contraction and insufficiency of the cardiac orifices.

Valvular lesions of the heart have often assuredly for their primary cause an attack of acute articular rheumatism: clinical observation, however, will teach you that lesions of the mitral and aortic orifices may likewise exist without there being a possibility of discovering in the antecedents of the patients any articular manifestation of the rheumatic diathesis. While it is true that rheumatism often causes diseases of the heart, it must also be admitted that there are cardiac lesions originating in wholly different causes. To mention only one of them, alcoholic intoxication, which determines most remarkable alterations of nutrition in the fibro-serous coverings of the liver and brain, has certainly its part in the etiology of organic affections of the heart. This etiology is, moreover, proved by the co-existence, so frequent in alcoholic drunkards, of lesions of the heart and cirrhosis of the liver.

How then does acute rheumatism act upon the heart? The pericardium is a fibro-serous membrane which completely envelopes the heart, and isolates it from the neighbouring organs. It consists of two portions: one, the parietal, is free, and constitutes the pericardial pouch: the other, almost wholly serous, is called "visceral," because

it covers the heart, and is closely united to it. The serous fold of the parietal and visceral portions is composed of epithelial cells, which lie on the conjunctive tissue. The epithelial layer is non-vascular, and is nourished by infiltration of plasma from the more deeply seated vessels. When rheumatic inflammation attacks the heart, modifications of the functions of nutrition become apparent. The capillary vessels which ramify in the cellular tissue become more numerous: the plasma which they allow to transude through their walls no longer supplies normal epithelial cells, and the cellular tissue becomes infiltrated with new products, and with fat. The serous surface loses its natural smoothness, the membrane itself becomes thickened, and deposits new products on its surface—false membranes—which assume various forms, and may present all the characters of new membranes. The membrane which lines the cavity of the heart is, like the pericardium, composed of two layers, a serous and a fibrous: in it, rheumatic inflammation determines lesions analogous to those which it produces in the pericardium. However, the modifications of nutrition caused by rheumatism are most remarkable on the folds of endocardium which constitute the mitral and aortic valves. Not only does the serous surface of these valves lose its smoothness, but it also often becomes the seat of fibrinous deposits, and of conjunctive cells resembling mulberry shaped granulations, either scattered or collected in groups. At other times, the thickened valves become the seat of calcareous deposits. These deposits, as has been shown by chemical analysis, are composed of carbonates of lime and soda. These transformations of primary organic tissues are consequences of the transformation of the plasma; and there are found, as you know, analogous transformations on the pleuræ and serous surface of the dura mater.

When the valves have become altered in this manner, they present puckerings of the cardiac orifices which prevent the normal play of the valves. There are other lesions of the valves characterised by atheromata, or by a vascular injection which may lead to actual ulceration. I shall recur to the subject of ulceration in endocarditis at the close of this lecture.

When the joints have been the seat of rheumatic inflammation, they may, after a period of variable duration, recover their functional integrity; but there is no similar recovery after endocarditis: the lesions, be they ever so slight, are irremediable, and usually they become worse and worse. It is necessary, however, to remark that

this evil progress may be very slow, leading neither necessarily nor immediately to great disorder of the cardiac function. The thickened valves may retain sufficient flexibility to continue to act as perfect valves, rising and falling regularly in such a way as to afford free passage to the blood and prevent its regurgitation into the cavities of the heart.

Though there be no functional lesion, and though the valves be but slightly thickened, and have lost little of their normal smoothness, an attentive ear can detect blowing sounds, which do not exist when the valvular apparatus is in a state of integrity.

The structural modifications of the valves may remain very slight for many years: at other times, the nutrition of the valves has been so much modified by the rheumatism that the lesion goes on constantly increasing, presenting to the ear rough and rasping blowing sounds. The circulatory function may, nevertheless, not appear seriously impaired, from, simultaneously with the contraction of the cardiac orifices and the insufficiency of the valves, the cardiac muscle redoubling its efforts to overcome the contraction of the orifices, and to struggle against the insufficiency of the valves. We then have *physiological* hypertrophy of the heart. But sooner or later, the efforts of the muscle become exhausted, and are powerless to overcome the constantly increasing obstacles. From this time, the physician detects all the general symptoms of chronic disease of the heart. But do not believe, Gentlemen, that the heart quickly abandons the struggle. Clinical observation will inform you, that the disorder in the pulsations of the heart may disappear, and that for a variable period it may recover an energetic power, especially if a critical evacuation by the intestines or (as more frequently occurs) by the kidneys relieve the vascular system from dropsical pressure. We can very frequently prolong the life of the patient by exciting an abundant diuresis, and so restoring some of the power of the cardiac muscle.

In the immense majority of cases, the endocardium is affected after the articulations; but it sometimes happens, quite exceptionally, that the order of events is reversed, and that the law of Bouillaud is verified in an inverse sense; or in other words, that the rheumatism first attacks the endocardium, and then the joints. I had three such cases during the course of the year 1864.

A young man was admitted to Saint-Agnes's ward with high

fever, and great general discomfort, in whom the only local morbid symptom was a somewhat intense blowing sound at the apex of the heart. Had this sound been heard only at the base of the heart, I might have attributed it to anæmia; but as it was, I had no hesitation in regarding it as evidence of endocarditis. Four days after admission, the knees became swollen and painful, and subsequently the shoulders were effected in a similar manner; and finally, the young man had all the symptoms of acute multiarticular rheumatism of average intensity. The patient recovered, but when he left our wards had a blowing sound, the very characteristic roughness of which sufficiently proved both the exactness of the diagnosis as to the anterior acute attack, and the existence of a contracted state of the left auriculo-ventricular opening, with insufficiency of the auriculo-ventricular valve.

The second case was that of a woman, aged 38, who occupied bed 11 of Saint-Bernard's ward. She had never had rheumatic arthritis at the date of her experiencing, three years ago, palpitation of the heart: she had a small, rather frequent cough, with dyspnœa, but without hemoptysis. The cardiac disturbance became at length so great, that she resolved, a year ago, to go into Professor Bouillaud's wards in La Charité. At that time, the distinguished professor detected a cardiac affection, for which he subjected the patient to active treatment. I beg your special attention to this case, because it shows you that the signs of which I have just been speaking have been observed by Bouillaud, and that like me he has attributed them to a lesion of the endocardium.

I shall now describe the affection for which this patient was admitted to my wards. Fifteen days before admission, she—*never before having had pains in the joints*—felt acute pain in the left knee, which became red and swollen; and she was unable to walk. On admission, the knee had ceased to be painful; but there were swelling, redness, and pain in the tarsal articulations, extending along the synovial sheaths of the tendons of the left foot and left thumb.

On examining the heart, I perceived, at the apex, accompanying the first sound, a blowing sound, which was very strong and rasping. This blowing sound was not heard at the base of the heart, and was not continued into the aorta. The pulse was small, and exceedingly irregular. The heart was considerably increased in volume. The liver, also, was very large. The respiratory sounds

were everywhere natural, and, notwithstanding the cough, there was no pulmonary congestion.

The intensity and roughness of the blowing sound, its maximum intensity being at the apex, and the smallness and irregularity of the pulse concurred to lead me to diagnose an affection of the heart; the view I adopted being, that there was contraction of the left auriculo-ventricular opening, and insufficiency of the mitral valve. The diagnosis, supported by the existence of congestion of the liver, was confirmed by the previous diagnosis of Professor Bouillaud.

I have no doubt that this woman has an organic disease of the heart: that this disease had endocarditis as its starting point: and that the endocarditis, which was of old date, had been latent: finally, that it was proved to be rheumatic endocarditis by the arthritis which you had the opportunity of observing. The point in this case to which I desire specially to direct your attention is the existence of the cardiac prior to the articular manifestations.

Cases of this kind are perhaps not so unusual as might be supposed. When treating the case now described, I was seeing in consultation a young matron of Brest, then suffering for the first time from subacute articular rheumatism, and who had had previously two attacks of pleurisy. In this young lady, I detected a *superficial* double blowing sound at the base of the heart, and a single rasping blowing sound at the apex. I had no hesitation in attributing the first of these sounds to the friction of old false membranes, the result of a previous attack of pericarditis; and attributing the second, that is to say, the single sound at the apex, accompanying the first sound of the heart, to an organic lesion consequent upon an attack of endocarditis. I considered myself fully justified in attributing to one cause, that is to the rheumatic diathesis, the existing rheumatic attack, both attacks of pleurisy, the pericarditis, and the endocarditis.

Observe then, Gentlemen, that *the rheumatic affections of visceral serous membranes may precede rheumatic affections of the articular serous membranes.*

Let me mention a case in which we observed endocarditis without consecutive arthritic manifestations. I refer to the young woman, aged 26, who occupied bed 30, Saint-Bernard's ward. She was admitted on February 9th, suffering from excessive dyspnœa, which began with shivering, and lasted for two days. The respiration was

very frequent, though the pulse was not more than 92. Nothing morbid was appreciable in the lungs; but a rough intense blowing sound was heard at the apex of the heart. There was evidently endocarditis accompanied by dyspnœa, which is not a usual symptom of that disease. Four days later, the pulse was 112, and the respiration 60 in a minute. It was not till eighteen days after admission, that she first complained of acute pain at the apex of the heart, shooting through the whole of the epigastrium. The spinal apophyses of the fourth, fifth, and sixth dorsal vertebræ did not become painful till four days later. This woman during the whole of her sojourn in our wards, had no articular pains, and she left the hospital without any functional disorder, retaining, however, the blowing sound at the apex.

You see then, that this strong young woman, who had never had articular rheumatism, was suddenly seized, when in a good state of health, with initiatory rigors, such as occur at the onset of the phlegmasiæ. Dyspnœa, attended by fever and unaccompanied by pain in the side, then set in: and this dyspnœa continued for a long time before there was any manifestation of pains. The pain, inflammatory in its nature, became the immediately exciting cause of intercostal neuralgia and epigastralgia. The proof that originally the pain was of purely inflammatory origin is that the painful points over the apophyses, characteristic of neuralgia, did not appear till a period considerably later than the pain in the side. The existence of pericarditis was not only made evident by the *bruit de souffle* at the apex, but also by that sound being rough and persistent after the other symptoms had disappeared. This woman has an organic lesion, which must sooner or later manifest itself by disastrous consequences.

I now wish, Gentlemen, to speak to you of a connection which exists between rheumatism and erysipelas. There is not only an analogy between the two diseases which are only seemingly inflammatory, but there is likewise a co-relation. Not only have they the same migratory character, but the one may replace the other; as, for example, rheumatism may succeed erysipelas. At present, we have a simultaneous epidemic of erysipelas and rheumatism. A young girl who lay in bed 8, Saint-Bernard's ward, was suddenly seized by rheumatic pains, when convalescent from severe erysipelas of the face. This patient, aged twenty-two, had already had, according to her own statements, very frequent erysipelatous attacks.

The convalescence from the rheumatism did not go on satisfactorily: there was a vague feeling of discomfort, and some fever in the evening. After two days of these undecided symptoms, she had acute pain in the knees, and an exacerbation of fever in the evening. Next day, the joints were swollen. Two days later, there was heard a *bruit de souffle* at the base of the heart, accompanying the first sound: it was not a soft blowing, due to anæmia, but a rough blowing which was evidently endocardiac. After the knees, the elbows, then the wrists and fingers were seized: in turn, the ankles and toes were attacked. At the present moment, the patient is in a really alarming state: in the evening, her pulse is about 120: her pains are excruciating: her appetite is gone: and during the eleven days which have elapsed since the rheumatism broke out, I have accomplished nothing by the treatment employed.

I cannot resist placing side by side the phenomena which we observe here after erysipelas with those so often seen after *scarlatina*, and (though more seldom) after nodular rheumatism. I have told you how common it is to see acute articular rheumatism, as well as pericarditis and endocarditis, during the convalescence from scarlatina. Now, erysipelas is an affection in which the skin is implicated as in scarlatina: erysipelas, which presents stronger affinities with fevers than with the phlegmasiæ, possesses, like scarlatina and nodular erythema, a tendency to be followed by rheumatism associated with endocarditis.

You no doubt recollect what I said regarding the relations of *chorea* to rheumatism. You know that rheumatism is one of the most powerful predisposing causes of chorea. In the majority of cases adduced in support of this law of co-relation, the rheumatism precedes, at a longer or shorter interval, the appearance of the chorea. I have sometimes, however, been able reciprocally to announce the more or less speedy advent of articular rheumatism in children brought to me with chorea; and the result has justified my unfavourable prediction. Extend the induction to its extreme limits, and consider that since chorea, (a rheumatic affection,) may precede arthritis of the same nature, it may quite as well, and for the same diathesic reasons, precede or accompany endocarditis. This conclusion, derived from the most legitimate induction, is confirmed by clinical observation. You recently saw in bed 25, Saint-Bernard's ward, a girl of sixteen with a first attack of chorea. On admission,

the chorea was of eight days' duration: but she had had previously about three weeks of general discomfort, feverishness, insomnia, and loss of appetite. Three days afterwards, she experienced slight pain at the heart, unaccompanied, however, by palpitation or dyspnœa. This young woman has never had articular pains. The chorea is of average severity and is most intense on the left side, where there is anæsthesia and great debility. Guided by analogy, I auscultated the heart with much care; and had no difficulty in hearing a rough blowing sound at the apex. This patient, therefore, has had endocarditis at the same time as chorea. The rheumatism in this case, in place of attacking the articulations, attacked the endocardium, the law of co-relation being therefore only indirectly confirmed. This case is in harmony with an observation made by Dr. Henri Roger. In his clinical lectures at the Hôpital des Enfans Malades, this judicious observer has recently stated that in at least one fourth of all the cases of chorea which he has observed, there were heart complications, either with or without rheumatism.

It might appear that as the internal covering of the heart is so frequently affected during a course of acute articular rheumatism, and as the similar tunic of the arteries and veins is identical with it in structure and functions, that they must possess the same morbid affinities, and become also often implicated like the endocardium. Nothing, however, is more different than this from what actually occurs. Enteritis and rheumatic phlebitis are exceedingly rare. Dr. Bouillaud has well remarked, that phlebitis may occur in the course of rheumatism; but he adduces no case in support of the statement: and it is easy to see that his statement is based rather on analogy than on observation. We, however, have had an opportunity of seeing some of these exceptional cases: I refer particularly to the patient whom you have seen in bed 16 of Saint-Agnes's ward.

This man was thirty-six years of age, pale, and debilitated. His skin was white and soft. He was in the habit of drinking to excess, particularly brandy. He was admitted to the hospital on 11th March, 1864, with pain and swelling of the right elbow and both knees. This state had existed four days, having been immediately preceded by an attack of intense fever. There was no room for doubt in forming the diagnosis: the malady was articular rheumatism. It was the first time the patient had suffered from it.

The amount of fever was moderate; and there was little in the general state of the patient to occasion anxiety. Both knees, the

right elbow, wrist, and shoulder were swollen and very painful. There was neither blowing, nor any other abnormal sound of the heart. Respiration was regular, and the respiratory murmur was heard everywhere.

There was *one* circumstance mentioned by the patient in giving the history of his malady which struck me: he stated, that on the first day of the attack, he experienced acute pain in the calf of the right leg, and on the following day, he similarly suffered in the left. Both calves, in fact, were tense, as if swollen, hard, and very painful on pressure; but the pain was chiefly caused by pressure made in the course of the saphena veins, which could be traced under the skin like two hard cords. The pain was also very acute in the favourite seat of phlegmasia alba dolens; that is to say, in the posterior part of the calf.

There did not appear to be any indications of muscular rheumatism. The idea naturally suggested itself to my mind, that there was inflammation of the deep-seated veins of the calf, and that the painful induration of the saphena veins indicated a change in their condition. But as there was no œdema, I resolved to wait before I positively declared the existence of endophlebitis.

Six days afterwards, on the 18th, there was no change in the state of the legs, but the feet were evidently swollen. For five days, the left arm had been swollen, and throughout the whole extent of its internal aspect, it presented the yellow hue of ecchymosis. Pressure over the biceps occasioned great pain; and in the axilla, a hard painful cord could be felt, which was evidently the obliterated axillary vein. It is remarkable that the arm is very greatly swollen, the fore-arm much less swollen, and the hand hardly at all swollen. There was great effusion into both knee-joints, which were but slightly painful in comparison with the legs. The radio-carpal articulation, which has been affected is now free.

There was no blowing sound of the heart.

On the day after admission, there was increased tumefaction of the right calf, which at its greatest diameter measured thirty centimeters in circumference. The left calf, which also was swollen, did not measure more than six centimeters. The superficial veins were attacked in turn: they became painful to the touch, and lost their elasticity. There was great improvement in the arms; but the left arm continued to present large ecchymotic stains.

There was neither fever, heat of skin, nor sweating. The most careful auscultation did not enable me to detect any abnormal cardiac sound.

It is, therefore, evident, that this rheumatic patient has not endocarditis, but that he has numerous phlebitic affections; that is to say, that the diathesis in place of striking the endocardium has attacked the internal coat of the veins, constituting endo-phlebitis.

On the 19th, the patient suffered from headache and muscæ volitantes. The pain, which was localised in the median line of the head, in the course of the superior longitudinal sinus, led me to suspect inflammation with consecutive obliteration of that venous canal, and to be on the outlook for the development of formidable cerebral symptoms. However, the headache and visual phenomena, after continuing three days, disappeared without my anticipations being realised.

On the 21st, both femoral veins, and both brachial veins from the elbow to the axilla, were completely indurated, without being more than very slightly painful. In the inferior extremities, the branches of the saphena vein, and that vein itself, were hard and painful. Thus, the principal venous trunks, and some of the superficial veins of the four limbs were obliterated, the result being œdema of the four limbs. On the 22nd, there was detected painful obliteration with superficial redness of the external aspect of the inferior third of the left fore-arm. Between the 23rd and 26th, the superficial veins of the fore-arm became implicated in succession; and the superficial veins of the legs became similarly affected. With a view to study with more precision the progress of the phlebitis, Dr. Peter, my *chef de clinique*, adopted the following measures:—with nitrate of silver, he traced the course of the superficial veins, which were distinctly red, so that on the following days the changes which had taken place might be seen. When the experiment was made, these veins which were red in colour and painful to the touch, were still permeable, and could be emptied by pressure. Two days after the experiment, they were hard and considerably prominent, could no longer be emptied by pressure, were less red, although they still remained nearly as painful as before. The redness and pain, therefore, were shown to have preceded the obliteration of the vessels: consequently, the inflammation of the veins preceded the coagulation of the blood. Consequently also, phlebitis existed, not radiating

phlebitis caused by the contact of the coagulum, but phlebitis which had, on the contrary, determined the formation of the coagulum.

I shall not dwell upon the alternations of increase and diminution of the œdema, arising from the greater or less impediment to the venous circulation: I prefer to direct your attention to a new phenomenon, one of most unusual occurrence, viz. the appearance on the 30th March, the twenty-third day of the disease, of petechiæ in every part of the left thigh. There was at that time increased pain with loss of mobility in the limb, its temperature being lowered instead of being augmented: the fever, though moderate in degree, had returned, the pulse, which was very small, ranging between 92 in the morning to 100 in the evening. The patient groaned incessantly; and his general condition seemed very bad.

On the following day, the œdema had gained the scrotum and lower part of the abdomen. Next day, the inferior part of the chest was œdematous; and the internal mammary vein was painful throughout its entire course.

On the 3rd April, the twenty-seventh day of the disease, the fever had ceased; but there was increased œdema of the abdomen and chest. On that day, a large ecchymosis appeared on the dorsal surface of the left foot, which was enormously swollen. On the succeeding days, phlyctenæ appeared in the situation of the ecchymosis, and a petechial eruption accompanied by acute pain became visible on the knee and right thigh: at this time, nearly the whole of the lower extremities were covered by petechiæ.

In the latter days of April, the whole of the skin of the dorsal surface of the left foot was sphacelated, the corresponding skin of the right foot being sphacelated in part. The skin of the calves of both legs was extensively ulcerated, as was likewise the skin of the scrotum and prepuce.

However, as I pointed out to the students who followed the daily visit, the indurated radial and ulnar veins were gradually diminishing in volume, and a similar change was taking place in most of the superficial veins of the lower extremities. I predicted a speedy return of circulation through these veins, and said that it would take place before the large venous trunks became permeable. The event verified my prediction. A long time elapsed before the large venous trunks became permeable. At the end of June, four months from the commencement of the affection, the

axillary veins were still indurated; and although they had been free from pain for a long time, there was no ground for supposing that the circulation had been resumed in them. It was not till the middle of July, that the large venous trunks had ceased to be obliterated.

The loss of substance in the feet and legs degenerated into ulceration of a bad character. The ulcers were sordid, bled on the slightest contact; and did not cicatrise till the middle of September. Even at that period, six months after the phlebitis commenced, the ulcerations on the calf of the left leg were not quite cicatrised.

It would have been difficult to have seen a more anæmic patient; but all the functions were pretty naturally performed. The fever had disappeared about the end of the first month of the illness, the functions of the heart were unaffected, respiration was good, the appetite sufficiently keen, and digestion well performed. The patient had neither albuminuria nor diarrhœa. His resisting the unfavourable impression of the serious local symptoms must be imputed to the plastic functions not having been impaired. He left the hospital at the middle of September with persistant œdema of the calf of the left leg, and an imperfectly cicatrised ulcer of the same limb. I believed that residence for some time at Vincennes would hasten recovery which it would be difficult to bring about in an hospital.

I particularly insisted upon part of the treatment consisting in the administration of sulphate of quinine and tonics. I had for a long time kept the patient upon good fare. He had been taking the diuretic wine for a long time.

If we now analyse the series of morbid changes which took place in this patient, we shall find that the rheumatic affection almost simultaneously attacked the joints and the internal coat of the veins, respecting the endocardium; so that we had endophlebitis in place of endocarditis. This is a fundamental fact which is rather unusual in its character, although in respect of this particular instance the histological well explains the morbid analogy.

Phlebitis, as usual, caused obliteration; but the obliteration, which was on an extensive scale, led to an unlooked for result, the production of petechiæ and ecchymoses, and to sphacelus, which under such conditions is an unusual occurrence.

You are aware that articular rheumatism is the morbid state in which the blood contains the greatest proportion of fibrin; and you also know that that is a condition of the blood which certainly does

not predispose to hemorrhage. May it not be then that in this disease petechiæ and ecchymoses greatly depend on the numerous obliterations of veins, the blood (notwithstanding these obliterations) flowing through the capillaries so as to distend and ultimately rupture them—may not this be the explanation of the petechiæ and ecchymoses? The arterial blood having passed into the capillaries, and being unable to leave them by the veins, the necessary result was rupture. This is the explanation of the occurrence of hemorrhages accompanied by pain, at those places where there had been the greatest amount of œdema.

In respect of sphacelas—so seldom met with in venous obliteration—it was evidently the result of the great distension of tissues; and also, probably, of the disturbance of interstitial nutrition at those points where the venous circulation was almost entirely suspended by obliteration of the deep and superficial veins.

The progress of the multiple phlebitis presented peculiarities which it is important to point out. For example, the inflammation proceeded from the large venous trunks to the branches. It was the deep veins of the arms and calves of the legs which first became painful, while, at the same time, œdema was observed to proceed towards the distal extremity of the member. Resolution on the contrary, and unblocking, proceeded from the branches towards the trunks. We had opportunities of seeing the superficial indurated veins diminish in volume little by little, and then become permeable, the collateral circulation being thus slowly re-established. The symptomatic œdema disappeared much more rapidly in the upper than in the lower extremities; and it left the thigh long before it disappeared from the calf and the foot. Even when the patient left the hospital, the calf and foot retained a diffuse puffiness.

For more than a month, the circulation was almost completely suspended in the four members, and we could imagine how the interstitial nutrition must have been interfered with by the very fact of the arrest of local circulation. During the whole of this period, the patient had in a permeable state scarcely more than the large venous trunks of the abdomen and head; and in respect of the venous circulation, the four extremities were as if they had been amputated. For a short time, I was afraid that the cranial sinuses would in their turn become implicated: when the patient was suffering from pain in the course of the sagittal suture, I was even under the impression that the superior longitudinal sinus was obliterated:

but it turned out, happily for the patient, that his sinuses were not implicated similarly to the veins of his limbs; for it is easy to understand the serious consequences to the brain which must have followed such an implication. It is remarkable that this patient, notwithstanding the existence of such causes of embolism, had no pulmonary complication.

In terminating the history of this case, I wish only briefly to discuss the two hypotheses which present themselves in relation to entire venous obliteration. Was the obliteration primitive, and did the coagulation of the blood determine the irritation of the vein? Or, was the obliteration of the vein consecutive to its irritation, and did it cause the coagulation of the blood? In favour of the first hypothesis, we may urge that in rheumatism there is a great augmentation in the quantity of fibrine, and allege that this hyperinosis would sufficiently account for the spontaneous coagulation of the blood at the most distant parts of the circulation, where the current is slowest, that is to say, in the limbs. But the very simple experiment made by my *chef de clinique* demonstrated that the redness and pain in the veins preceded their obliteration; and consequently, that the affection commenced in the parietes of the veins, so that the coagulation of the blood was consecutive to the venous affection. It is, therefore, very evident that our patient has had attacks of phlebitis, and that these attacks were *rheumatic:* indeed, the number of veins affected is a sufficient proof of the existence of a diathesis assailing not one isolated point, but the entire venous system. There is only one general affection which can produce lesions so extensive and so symmetrical.

Having said this much regarding the clinical peculiarities of acute articular rheumatism, let me now return to its most usual complications.

Acute rheumatism, produces, we have seen, diseases of the heart: it is, therefore, incumbent on the practitioner to prevent the continuance of the rheumatic inflammation of the serous membrane of the heart. Revulsive treatment is assuredly the best means which we possess of accomplishing this object. In conjunction with it, we must direct the patients to use all hygienical precautions likely to prevent the rheumatism abandoning the articulations. We

must prescribe scarifying cupping over the region of the heart, or better still, the application of irritants to the skin, such as sinapisms and blisters, which will diminish fluxion towards the heart. I have little liking for therapeutical theories, and have no confidence in the theory of revulsion; but I believe, in accordance with the statements of all clinical observers, that the application of revulsives to the region of the heart first calms and then often puts an end to pains and palpitations so as to enable the heart to regain the regularity of its pulsation. You must, however, at the same time, carry out the general treatment of the disease, which varies according to the prevailing medical constitution, and the individual's constitution; and which will demand, it may be, bleeding, purging, alcalies in large doses, sulphate of quinine, aconite, or digitalis.

How can such different medications tend to the same end, the cure of the patient? So distinctively characterised a disease as rheumatism ought to have only one remedy; but no such specific is within our reach. When a man has grown old in the practice of the art of medicine, he accepts, with Sydenham, Boerhaave, and Stoll, the fact that acute rheumatism is a special pyrexia requiring for its development the existence of certain individual and atmospheric conditions. It presents many characteristics. It only occurs in certain individuals, and in certain families: the fibrous tissue is its favourite seat: it imparts a peculiar aspect to the person it attacks. No clinical observer can deny that it is a disease which possesses the inflammatory element; chemical analysis shows us that the blood is charged with fibrine; but it also contains another morbid element, with the nature of which we are not acquainted, and the existence of which is revealed to us only by the constancy of its manifestations. Again, these manifestations are generally transient, and usually leave no trace, *except on the heart*. Rheumatism is essentially migratory: though it constantly attacks the fibro-serous tissue of different organs, it leaves one articulation to seize upon another, and often returns to that which was first stricken. Moreover, it may assail organs the functions of which cannot be disturbed for a certain time without causing death; and necroscopic examination discloses no lesion of these organs adequate to explain the fatal issue. The old physicians, by whom rheumatism was well studied, perceived in it a fluid which pervaded the whole organism, and assumed the right of temporary domicile in different organs.

They observed that this was a precise indication: and, in relation

to this point, it is very interesting to read Van Swieten's commentary on aphorism 1493 of his master Boerhaave. This able observer regarded it as essential to eliminate, at any price, the morbid matter; and that as it circulated in the humours, it was sometimes necessary to open a vein to afford a free and abundant exit to the sanguineous fluid: by this proceeding, a great part of the rheumatic matter was supposed to be discharged. But Van Swieten recommends that this means of treatment should not be abused, as it cannot be long employed without incurring a risk of syncopic attacks and convulsions. Purgatives and sudorifics were also recommended by the illustrious professor of the university of Vienna, with a view to the elimination of the morbific matter by a natural emunctory.

This morbific matter, circulating in the normal humours of the economy, may be deposited in the viscera after having left the joints. Hence originates the theory of metastases, that is to say of change of situation in the matter which is producing the disease in any part of the organism. Likewise, when the old physicians saw a coincidence between the disappearance of the articular pain, and the patients complaining of dyspnœa, oppression at the chest, and cough, they unhesitatingly affirmed that the rheumatic matter had been conveyed to the lungs and pleuræ. Van Swieten informs us that, under similar circumstances, it has often happened, that the autopsy has revealed dropsy of the chest and pulmonary engorgement. The same clinical remark was made in respect of cerebral symptoms supervening in the course of rheumatism; and in these cases, there has been recognised serous effusion around the brain and in its ventricular cavities.

I am, therefore, Gentlemen, justified in saying that, towards the middle of last century, rheumatism was profoundly studied in its different manifestations: also, that the works published in later years on visceral rheumatism, particularly on cerebral rhematism, have had their own share of merit, by recalling the attention of the medical world to the secondary manifestations of rheumatism.

It sometimes happens, Gentlemen, that the viscera are primarily invaded by rheumatism. There is, as you know, a form of pneumonia called *rheumatic pneumonia*, which sometimes occurs with all the physical and rational signs of inflammatory pneumonia—the stitch in the side, cough, difficult breathing, bloody expectoration, dulness, râles, and blowing—in fact, every symptom and every physical sign. But that which gives this kind of pneumonia its dis-

tinctive character, and makes it a species, is that all the symptoms of pneumonia may suddenly disappear without the gradual decrease observed in inflammatory pneumonia. At other times, the patients have a stitch in the side, oppression, crepitant and subcrepitant râles, and blowing, while the expectoration is merely viscous or catarrhal, and presents no trace of blood. The rheumatic disease may remain confined to the lung; but it is not unusual for articular pains to occur on the cessation of the symptoms of pneumonia.

Again: the membranes of the brain and spinal marrow may be the primary seat of rheumatism. When lecturing on cerebral rheumatism, I brought before you several cases in which rheumatism primarily invaded the coverings of the cerebro-spinal axis. Recall to your recollection the case of the patient who was admitted to Saint-Agnes's ward with fever, and lumbar pains so violent, as to lead me to believe, in the first instance, that I had to do with the rachialgia of the invasion stage of small-pox. On the morrow of my first examination, I detected a rheumatic inflammation of one of the knees, while the patient at the same time stated that he no longer suffered in the lumbar region. Recall, also, the case of the female attendant of Saint-Bernard's ward, who, after having been subject to rheumatism for many years, was at a later period seized with rachialgia and incomplete paraplegia, then with pains in the head accompanied by visual disturbance and feelings of general discomfort, followed by the sudden supervention of articular pains, and the disappearance of all the cerebral and spinal symptoms. I cannot, Gentlemen, too strongly urge upon you to imprint these facts upon your memory, because they will unquestionably assist you in the diagnosis of rheumatic manifestations, and place you on your guard against adopting therapeutical proceedings which are often useless when they are not injurious.

I conclude, Gentlemen, these general considerations regarding acute rheumatism by remarking, that it very seldom passes into a chronic state, except when it has attacked only one joint. It seems as if it then exhausted all its morbid action on a single articulation, and by its intensity and continuance in one situation made up for that which it lacked in the extent of parts affected. Be that as it may, in such cases, the rheumatism causes chronic arthritis with alteration of the synovial membrane, cartilages, and osseous tissue: the local affection, termed *white swelling*, is frequently the consequence of similar localisations of the rheumatic principle. In our

clinical wards, you have had an opportunity of studying these very painful chronic arthritic affections which have their seat by preference in the knee and wrist: you have also seen in these cases the advantage which the patients derive from poultices of camphorated bread-crum with the addition of belladonna and opium. These poultices must not be renewed more than once in eight or ten days. Under the influence of absolute immobility, of temperature, and of the absence of pain, I have almost always obtained a cure of these chronic rheumatic arthritic affections.

Though acute multiarticular rheumatism seldom becomes chronic, it is subject to relapses. When you see a patient suffering from rheumatism, you ought to discover whether he has not had previously some acute rheumatic affection: it is important to ascertain whether there has been a previous attack. You ought to tell the patients that they have reason to fear new attacks of rheumatism; and must consequently avoid all determining causes of the disease.

There is perhaps no acute disease which so rapidly induces anæmia as rheumatism. The extreme pallor, the vascular blowing, and the hydræmic fulness of the pulse declare the existence of a state of acute cachexia quite independent of the medical treatment which has been employed. But though the blood loses a notable quantity of its red globules, it acquires a large amount of fibrine during the acute stage of the disease. I am not prepared to say that the excess of fibrine increases the plasticity of the blood; but the fibrinous productions deposited on the valves show that there is a great tendency to coagulation. Are we to believe that this excess of fibrine in the serum of the blood is the consequence of the supposed inflammatory element in rheumatism? It seems useless to discuss this question, wherefore I prefer simply to state the fact that along with the acute cachectic state of the patients there is very great fibrination of the blood. The crasis of blood is so much modified by acute rheumatism that months are required before the patients entirely recover their health.

I need not dwell at much length upon the treatment of acute articular rheumatism. Clinical experience has taught me that the wisest plan is not to employ a plan of treatment determined upon beforehand. The fever, pain, and inflammatory turgescence are, to a certain extent, necessary to enable the patient to come well out of the attack. Therefore we ought, generally, to do no more than try to imitate nature, that is to say, try to maintain the rheumatic sweat-

ing, ease the articular pains, and above all, avoid promoting visceral metastases by adopting improper treatment.

I do not at all believe that the sulphate of quinine has ever caused cerebral rheumatism. I know very well that metastasis to the brain may take place in cases in which sulphate of quinine has never been prescribed. Nevertheless, I consider it prudent, particularly when the antecedents or habits of the patients lead us to fear that there is some cerebral predisposition, to avoid the use of any medicine which can cause congestion of the encephalon, and consequent inflammation of the brain.

In England, for some years past, influenced by the views of Dr. Garrod, several physicians have successfully employed the bicarbonate of soda in doses of from fifteen to thirty-five grammes. This treatment according to the statements of the same physicians moderates the fever, and lessens the inflammatory turgescence without determining visceral inflammation, and likewise shortens the duration of the attack. Let us hope, Gentlemen, that farther observation will confirm these important statements. But when I remember how easily the Vichy waters induce anæmia in healthy persons, I cannot help fearing that the bicarbonate of soda will increase the anæmia of rheumatic subjects.

There is nothing calculated to carry conviction to the minds of practitioners in the writings which advocate the treatment of rheumatism by large doses of sulphate of quinine, nitrate of potash, and antimonials. In most of the reported cases, a sufficiently precise account has not been taken of the onset of the disease, its intensity, its duration, and its relapses to justify the responsibility of my advising you on this subject. Gentlemen, as you are entitled to receive from me the result of my experience, I confess to you that I do not regard any one method of treatment as absolutely preferable to all others. The practitioner must mark attentively the progress of the disease, and be in no haste to interpret the performances of nature. Rheumatism has a cause, the essential nature of which is concealed from us. Generally, the disease declares itself in several articulations, and visceral complications seldom occur. Our duty, therefore, is not to interfere very actively, at least not till the indications of treatment are very exact.

I have already described the plan I pursue in cardiac complications. When cerebral disturbance leads us to fear that there is localisation of the rheumatism in the membranes of the brain, the

gravity of that complication justifies our daring much; and in such cases, too, we must not too long delay interference. While by employing revulsives, we try to bring back the inflammation to the joints which were first attacked, we must employ saline purgatives so as to produce copious stools by subtracting from the blood a great part of its fluid constituents, thereby at the same time causing the discharge of a certain quantity of the morbific matter. I cannot confidently affirm that this kind of intervention will prove beneficial, but I can say with certainty that it will not produce any serious consequences to the patient; and this treatment has the advantage of not introducing into the organism any new element unknown to us in its mode of action.

When convalescence has once been established, never neglect to recommend great hygienical precautions; and be specially careful to get the patients scrupulously to avoid all causes which induce chills. Regarding rheumatic anæmia, I may remark that it hardly calls for any special treatment. Good food and the open air will restore to the blood its deficient red globules; and the excess of fibrine which has been observed will soon disappear.

It still remains for me, Gentlemen, to speak of *ulcerating endocarditis*. That term does not imply a new disease, occurring as a complication of acute articular rheumatism, or independent of the general disease. But the attention of the best observers is sometimes at fault, as I remarked when lecturing to you on exophthalmic goitre, locomotor ataxia, labio-glosso-laryngeal paralysis, and progressive muscular atrophy. Ulcerating endocarditis has evidently been always liable to occur; but it required an altogether fortuitous concurrence of circumstances for a lesion which perhaps had already been remarked without much importance having been attached to it, to become the subject of that special study, which was soon so prolific in results.

Prior to Bouillaud's discovery of the law of the coincidence of acute diseases of the heart with acute articular rheumatism, there has sometimes been observed functional disturbance of the heart during a rheumatic attack. In these cases, the patients may complain of palpitation, dyspnœa, and pain in the region of the heart. In the Letters of Morgagni and the *Sepulcretum* of Bonet, you will find indicated and described alterations of the pericardium and cardiac valves in patients who had died during the progress of acute articular rheumatism. All the clinical and anatomical facts were seen, but

their relationship was not recognised, so that the observation of the facts remained a dead letter. The glory of discovering and demonstrating this relationship belongs to Bouillaud.

Nor is this all: my accomplished colleague having observed that the patients die with typhoid symptoms, the consequence of gangrenous endocarditis, called attention to the fact, and so led the way to a new discovery.[1] Dr. Bouillaud was led to this view by a number of cases published in his *Traité des Maladies du Cœur*, particularly by the cases communicated to him by Saussier, Gigon (d'Angoulême), and Rivière.

Dr. Stenhouse Kirkes was, I believe, the first who followed in the path opened by Bouillaud: in an able work, he treats in a very remarkable manner many of the consequences of valvular alterations of the heart. Though Kirkes has not described ulcerating endocarditis, he has shown by his cases the nature of the principal consequences of the migration of fibrinous concretions formed in the heart, and mingling with the blood. At the date to which I refer, Kirkes had recognised the possible consequences of the migration of valvular concretions to the peripheric and pulmonic circulation. In the same patients, he likewise observed, on the one hand, softening of the brain with sudden hemiplegia, aphasia and obliteration of the middle cerebral artery; and on the other hand, infarctus of the spleen and kidney coincident with obliteration of the large vessels of these organs and small ecchymoses of the skin and mucous membranes, the result of sanguineous effusion, having in their centre a small spot of a yellow or chamois colour caused by obliteration of the capillaries. On the other hand, Kirkes had observed that lesions of the tricuspid valves produced serious alterations in the parenchyma of the lungs. Finally, he perceived that the broken-up fibrine might cause an infection of the blood, manifesting its presence by typhoid symptoms.

Dr. Kirkes looked upon all these lesions as similar in their nature, and similar in their origin; viz. the obliteration of an artery by a fragment of fibrine detached from the heart, if the fragment were large, the obliterated artery was proportionately considerable—the middle cerebral, renal, or splenic, for example—softening, or some serious morbid alteration of the organ, being the final consequence: if the fragments were of medium size, there were only ecchymotic

[1] Bouillaud: Traité Clinique des Maladies du Cœur. Paris; 1841.

spots at the points where they had been stopped: finally, he said that the disintegrated fibrine, by its admixture with the blood, could give rise to adulteration of the blood sufficient to induce typhoid symptoms. So much for the left side of the heart. Again, should the fibrinous mass be detached from the tricuspid valve, it is in the cycle of the right side of the heart that untoward symptoms are observed—obliteration of the pulmonary artery and consecutive lesions of the lungs. Thus we see that almost to the very name, Stenhouse Kirkes had discovered embolism, and though he does not make special mention of ulcerating endocarditis, he had the great merit of calling attention to the functional disturbances induced by it, and even indicating the pathogenic filiation of the typhoid symptoms to which it gives rise.[1]

It appears then that although Bouillaud had called attention to gangrenous endocarditis and its consequences, it was certainly Stenhouse Kirkes who discovered the vascular obliterations, the consequent local lesions, the diffusion in the blood of disintegrated fibrine, and the general disturbance of the economy. After him, I must name Virchow, Bamberger,[2] and Friedreich,[3] as well as the French physicians, Charcot, Vulpian,[4] and Lancereaux.[5] It was in 1861, that MM. Charcot and Vulpian, in an admirable work, made known generally to the profession the doctrines of the German authors, and demonstrated the inflammatory vascularity of the aortic valves, and elucidated all the effects produced on them by inflammation. Subsequently, numerous cases of ulcerating endocarditis have been reported from the Parisian hospitals.

Inflammation of the valves may depend upon a previous inflammation, or may supervene without the pre-existence of any appreciable inflammation: it has consequently different modes of pathogenesis. Generally, nothing more than hyperæmia of the valves can be detected: there exists only a loss of substance, variable in extent

[1] Bouillaud:—Traité Clinique des Maladies du Cœur, T. ii, p. 308: Paris, 1841.—Kirkes:—*Archives de Médecine* for March, 1853.

[2] Bamberger, H.:—Lehrbuch der Krankheiten des Herzens. Wien; 1857.

[3] Friedreich:—Krankheiten des Herzens. Erlangen, 1861; 2nd edition; 1867.

[4] Charcot et Vulpian:—Note sur l'Endocardite Ulcéreuse Aigue à forme Typhoide. [*Mémoires de la Société de Biologie*, 1861. Paris; 1862, p. 265.]

[5] Lancereaux, E.:—Recherches Cliniques et Anatomo-pathologiques pour servir à l'histoire de l'Endocardite Suppurée, et de l'Endocardite Ulcéreuse. Paris; 1863.

of surface and in depth, velvety, and having sometimes irregular edges, free, or covered with fibrinous vegetations. At the bottom of the ulceration, there are new plastic productions, consisting of pyoid corpuscles, granular bodies, and cells of conjunctive tissue. Sometimes, the valve is perforated: at other times, the ulceration extends to the free margin of the valves, the edges being chequered by small thready or laminated prolongations.

The ulcerations are generally situated in the mitral and aortic valves: they are, however, also met with in the tricuspid and pulmonary valves.

When there is an abundant purulent secretion from the valves of the left side of the heart, it is obvious that purulent infection may ensue: on the other hand, in those cases in which the exudation consists exclusively of conjunctive tissue, of fatty and fibrinous bodies, the exudation may occasion capillary embolism and consecutive purulent infection. It is, therefore, necessary to draw a distinction, both from a pathogenic and clinical point of view, between the sanguineous mixture of the purulent product of an ulcerous endocarditis and the fibrinous disintegration of an exudation either formed or in process of formation. An attempt has been made to establish this distinction anatomically: it has been said, for example, that the fibrin is soluble by alcalies and acids, but that the cellules of conjunctive tissue and the plastic corpuscles resist these agents. In fact, embolia only give rise to local phenomena, provided the obliterating body has not itself undergone a previous pathological alteration. When the valve is in a state of hyperæmia, it may be granted that the inflammatory process has been the cause of the ulceration; but in those cases in which there has been no appreciable capillary injection, there is reason to suppose that the valve has been the seat of an atheromatous softening, which has become disintegrated, or that an alteration of nutrition analogous to gangrene has taken place in the tissues of the valve. Be that as it may, we are almost always able to detect small fibrinous granulations which are either isolated or agglomerated.

It was necessary, Gentlemen, before speaking of the symptoms of ulceration of the valves, to describe to you the anatomical lesion. It generally happens that in the course of a rheumatic affection, sometimes also in the latter months of pregnancy, or a few weeks after delivery, or at other times as the sequel of a cachectic state, or of an old or recent heart affection, or finally, under circumstances

depending upon any decidedly marked morbid condition, the symptoms declare themselves by a single fit of shivering, the patients complaining of general discomfort, articular pains, and feverishness. During the first days of the attack, there is loss of appetite, accompanied sometimes by nausea and pain at the epigastrium. Diarrhœa and tympanitic distension of the abdomen have also been observed. The prostrate condition of the patient, and the abdominal symptoms may lead to the supposition that the case is one of typhoid fever in its initiatory stage.

There are other cases, in which the patients, after some days of discomfort, are suddenly seized with shivering, frequent attacks of intractable vomiting, and profuse diarrhœa. One case is recorded in which there occurred cramps, coldness of the limbs, alteration of the countenance, and extinction of the voice. There is also observed, as in certain cases of cholerine, a period of reaction; and the symptoms of gastro-intestinal disturbance may disappear; then, cerebral symptoms supervene, the patient falls into a comatose state, and death follows about eight, ten, or fifteen days from the date at which the first symptoms of the malady showed themselves.

In several cases, jaundice of a more or less decided hue has been observed to occur in the course of the disease. Phenomena akin to the initiatory symptoms of typhoid fever may have led to the belief that the case was one of severe jaundice, a conclusion all the more probable, from the presence of petechiæ and extensive ecchymoses.

It appears, therefore, that, under various circumstances, the patients are seized with feelings of general discomfort, with symptoms similar to those which indicate blood-poisoning with a shivering fit (which may recur in an irregular manner), prostration, diminution of the vital powers, intestinal and hepatic functional disturbance. These symptoms may lead to the conclusion that the case is one of adynamic typhoid fever, cholerine, or severe jaundice.

But a slight auscultation of the heart is sufficient at once to testify that that organ presents modifications in its rhythm, in its pulsations, and in the intensity of its sounds, bearing no relation to those usually met with in typhoid fever, cholerine, or aggravated jaundice. We will find the first or the second normal sound of the heart replaced by a blowing sound, attributable only to the existence of valvular lesion. Now, autopsies have shown that ulcerating endocarditis may determine lesions of the mitral and aortic valves, and

that these lesions may cause stricture of the orifices, or insufficiency of the valves. Finally, it may happen that the fibrous deposits which cover or encircle the valvular lesions may be disposed in such a way that the sounds may temporarily cease to be audible, or that only one of the two morbid sounds may remain.

Be that as it may, a daily examination of the heart made with the requisite care, will soon remove all doubts as to the existence of a cardiac lesion. Hence it follows, that it is necessary to inquire as to the part played by this lesion in the production of the local and general phenomena which are observed.

We see then that the typhoid symptoms are dependent upon general purulent infection produced by an admixture of the blood with organic matters detached from the ulcerated valves. These organic matters will also produce effects by causing obliterations of arteries: they will determine vascular obstructions, infarctus of the spleen or kidneys, small capillary obliterations, or small intestinal, cutaneous, or mucous hemorrhages—in the centre of which obstructions yellow fibrin will be found. Finally, it is probable that the organic detritus, acting as foreign bodies, may determine small miliary abscesses.

Metastatic abscesses resulting from purulent infection have a preference for particular organs: and perhaps further observation will show that capillary embolia occur most frequently in determinate parenchymata. It is known that infarctus occurs most frequently in the spleen, next most frequently in the kidney, and that it is quite exceptional to meet with it in the liver. Does the rarity of infarctus in the liver depend upon the manner in which the hepatic artery arises from the cœliac trunk? This is possible: but, in any case, although fibrinous vegetations of a certain size have no tendency to become impacted in the hepatic artery, this exemption does not extend to molecular detritus, which being suspended in the blood, can circulate as easily as the red globules. This circumstance explains how it is that disturbance of the hepatic functions and jaundice are produced by the presence of vitiated blood through the liver.

The numerous ecchymoses observed on the mucous membrane of the gastro-intestinal canal, and on that of the air-passages, as well as in the pleuræ and pulmonary parenchyma, are sufficient to explain, to a great extent, the various disorders observed in these organs, in connection with ulcerating endocarditis.

Gentlemen, I ask you to note that in some cases of ulcerating endocarditis the cerebral arteries have contained embolia, and that this has led to paralytic hemiplegia.

From these anatomical and clinical facts, then, it appears, that in the cases in which there occur sudden signs of obliteration of the arteries, of ecchymoses, of jaundice, and symptoms of an alteration in the constitution of the blood, we must very carefully inquire whether there be not some lesion of the valves of the heart.

I regret that I have not collected cases from my clinical wards in support of the preceding remarks: but let me fill up this gap by giving you the principal facts of the case which forms the subject of the memoir of MM. Charcot and Vulpian, and of another case recorded by Dr. Chalvet, and explained in a remarkable manner by Dr. Lancereau.

The case of ulcerating endocarditis for which we are indebted to MM. Charcot and Vulpian, has this remarkable peculiarity, that the valvular lesion was situated in the right side of the heart, and that it gave rise to local morbid changes limited to the lungs, and to general typhoid symptoms.

The following is an abstract of this case:—

A man, aged 30, a plumber by trade, who had always enjoyed perfect health, after having been subjected to great fatigue, was suddenly seized with violent shivering, headache, and acute lumbar pains. Five days later, he applied for admission to the Hôtel-Dieu where the existence was ascertained of most of the symptoms of typhoid fever: there was high fever, the tongue was covered with a suburral coat, there was extreme prostration, some headache, and a little cough. It is noteworthy that this patient had recently attended upon his wife whilst she passed through an attack of typhoid fever.

On the seventh and eighth day of the disease, the same symptoms existed; and in addition there was one rose-colored lenticular spot on the abdomen, which was very decidedly tympanitic. The tongue was dry and cracked, and the mouth pasty: there was constant thirst, and frequent vomiting. The pulse was full and rapid. Over the middle region of the heart, there was heard a blowing sound, between the two normal sounds; it was different from the blowing sound perceived at the base on the day of admission. Respiration was difficult; and crepitant râles were heard in both lungs.

On the ninth day, the same typhoid symptoms existed; and there was also an inability to urinate. The urine drawn off by the catheter contained no albumen: it had been found in the urine on the

fifth day of the disease. There was no diarrhœa similar to that which is met with in dothienteria. The subcutaneous veins of the upper extremity were greatly distended. The pulse was rapid, full, and bounding. Both sounds of the heart were accompanied by a blowing sound.

On the tenth day, there was stupor, and a pale countenance. There was sweating from the whole cutaneous surface. No thoracic nor precordial pains existed. There was strong pulsation in the jugular veins; and great distension of the veins both of the superior and inferior extremities. The pulse retained the frequency and fulness it presented on the previous days. Auscultation of the heart gave positive indications of extensive valvular lesion.

On the eleventh day, there were alternations of quiet and agitation, with slight delirium. The stools were liquid and copious. The countenance was pale, and indicated stupor. The profuse sweating continued. Subcrepitant vibrant râles were heard. Posteriorly, throughout the whole extent of both lungs, there were subcrepitant and vibrant râles, without blowing sound, and without dulness. The tympanitic distension of the abdomen continued. There were no rose-colored lenticular spots. Pressure of the abdomen did not give rise to any pain. The articulations presented no structural changes. The urine (obtained by catheterism) showed no traces of albumen.

On the twelfth day, the patient had had several liquid stools. During a great part of the night, he had delirium. The countenance had a weary aspect. Questions were answered slowly but correctly. The patient said that he felt very well. The pulse was feeble. Auscultation continued to give the same cardiac and pulmonary signs.

On the evening of the thirteenth day, he died. Death was not preceded by convulsions. To the very last, the patient retained his consciousness.[1]

What conclusions are we to draw from this clinical history? A man, who considered that he was in good health, was suddenly seized with shivering, after experiencing moral and physical depression. The aggregate of the general symptoms soon justified typhoid fever as the diagnosis. On the seventh day, a single rose-colored lenticular spot appeared. It must, however, be remarked that there never was

[1] Charcot et Vulpian :—Note sur l'Endocardite Ulcéreuse Aigue à forme Typhoide. [*Mémoires de la Société de Biologie, année* 1861. *Paris:* 1862.]

any epistaxis; and that although the tongue and stomach afforded signs of intestinal lesion, the patient had not had during the early days of his illness the frequent liquid stools usually observed in typhoid fever.

After the eighth day, had the case been one of typhoid fever, the general symptoms, particularly the intestinal symptoms would have become more decided; but up to the thirteenth day, these symptoms remained stationary. On the eighth day, auscultation revealed the existence of an organic lesion of the heart; and at the same time, râles louder and more diffused were heard throughout a great extent of the chest. The tension, moreover, of the peripheric venous system, and the persistence of pulsation in the jugular veins, scarcely left any room to doubt the existence of valvular lesion of the right side of the heart. Finally, the absence of that aggravation of symptoms usually observed in the second seven days of dothienteria indicated that the case was one rather of a typhoid than dothienteric character. That was the view entertained by MM. Chareot and Vulpian: and the sudden manner in which the cardiac affection began, and the rapidity of its progress led them to believe—under all reserve, however,—that this was ulcerating endocarditis.

The autopsy confirmed their opinion: there was no morbid change in the intestinal canal deserving of notice. *Peyer's patches and the solitary glands were in a perfectly normal condition.* The liver, kidneys, and brain presented no morbid appearances; that is to say, there was neither capillary embolism nor infaretus. The spleen was enlarged, and a little softer than natural. The heart was slightly hypertrophied. On the visceral portion of the pericardium, there was a white patch of old date. There was no imperfection of the aortic valves, nor of those of the pulmonary artery; no important alteration of the left side of the heart existed.

Though the valves of the pulmonary artery were normal, the tricuspid valves were damaged. One of them was perforated, and on the edges of the perforation, were small, greyish, fibrinous concretions of a granular appearance. Moreover, one of the largest of these granulations was retained by a pedicle which was also fibrinous: on lowering this vegetation upon the ventricular surface of the valve, it entirely obliterated the perforation. The auricular surface of the same valve was more altered; it presented small, and easily detached whitish grey mammillary prominences, which seemed principally to consist of fibrinous deposits, and appeared also to be

partially composed of valvular tissue in the incipient stage of disintegration.

On examining the valvular vegetations with the aid of the microscope, they were found to consist of fibrin in the fibrillary state, containing amidst it some red blood-globules and a very small number of white corpuscles. The diseased portion of the valve contained a fibrinous, fibrillary deposit, a very few oblong cell-germs, and a still smaller number of fusiform bodies. In the fibrinous substance, there was a large number of very minute granules of fat. There did not exist any germs of pus globules, nor any pus globules. There were very few white corpuscles in the cardiac clots.

Gentlemen, observe, that the dominant constituents of the morbid valvular products are fibrin in the fibrillary state, and fat-granules. The anatomical disposition of these morbid products renders it probable that similar products may be carried in the sanguineous current through the pulmonary artery.

In point of fact, the pulmonary parenchyma contained numerous abscesses, the largest of which were about the size of a hazel-nut, the majority being not bigger than hemp-seed. They were all covered with a tolerably thick false membrane. These abscesses contained a yellowish grey substance, in which were found a great many purulent and pyoid corpuscles, and likewise numerous cells with several cell-germs. On the surface, and in the substance of the lungs, were observed irregular patches of ecchymosis, in some places resembling apoplectic clots. At a number of points, a yellowish white matter was observed filling the canals. These canals were turgid; and seemed to be branches of the pulmonary artery. The matter with which they were distended was in the form of cylinders, and consisted of fibrin: the cylinders contained innumerable pus-globules.

How are we to explain the succession of morbid phenomena in this case, the details of which are so complete? Probably, as MM. Charcot and Vulpian remark, the ulceration of the valve proceeded very slowly; and the shivering fit was the signal of poisoning produced by the blood becoming mixed with the valvular detritus. The numerous metastatic abscesses in the lungs were the result of arrest of fibrinous matter in the minute ramifications of the pulmonary artery. Moreover, the fibro-purulent substance, which obstructed several ramifications of the pulmonary artery, is an anatomical proof of the cardiac origin of the pulmonary abscesses, although in no

part of the peripheric venous system did there exist any cause of embolism or purulent infection.

In Dr. Chalvet's case the diagnosis was made by Dr. Lancereau on the dissecting-table.[1] The ulcerous endocarditis was in this case situated in the left side of the heart, and the autopsy was so carefully made, that the advance of the general infection was followed (so to speak) step by step: then, by chemical and microscopical examination, the matter itself which were the cause of that infection was demonstrated in the blood.

A woman, aged twenty-two, who had been in impaired health for a year, was suddenly affected with anxiety, epigastric pain, and nausea. She was desirous to continue at her work, but was soon obliged to desist, being seized by a violent attack of shivering which lasted two hours, and was followed by sweating. Next day, there was a return of the shivering: four days from the first onset of the symptoms, the patient was taken to the Hospital Saint-Antoine, where she presented all the symptoms of a violent attack of cholerine —vomiting, diarrhœa, coldness of the extremities, cramps, feeble voice, and exhausted strength. There was no albumen in the urine.

The diarrhœa became less abundant, and the pulse rose; but the vomiting continued. On the eighth day of the disease, the face and eyes were injected: the fever was more intense, and the skin was hotter. On the ninth and tenth days, symptoms the same as those now described were present; and the patient was restless and very anxious. On the eleventh day, jaundice appeared, which soon spread over the whole body. The stupor and adynamia accompanying the appearance of the jaundice afforded some ground for thinking that the case was one of malignant jaundice. Next day, some ecchymotic spots were visible upon the limbs. The countenance had a more anxious cast. On the thirteenth day, the patient died.

No examination of the heart was made: none at least is recorded in the history which we have of the case. No reference is made to the functional condition of the organ. The inference to be deduced from this fact, as well as from many others of a similar character is that a lesion of the valves of the heart occurring without any symptoms to attract notice, became a cause of general infection,

[1] Chalvet:—Case reported in Lancereau's memoir—"*Sur l'Endocardite Ulcéreuse*" published in 1861 in the *Comptes Rendus des Séances et Mémoires de la Société de Biologie.*

under the influence of which infection the patient succumbed after presenting typhoid symptoms.

At the autopsy, small ecchymotic spots were observed on the surface of the lungs; but the parenchyma of the organ contained neither apoplectic clots nor metastatic abscesses. The liver, on the contrary presented remarkable morbid changes: a great number of cells were destroyed, and an infarctus was seen near the centre of the organ, and many branches of the hepatic artery were partially obstructed by small clots, chiefly formed of fibrin.

The spleen, which was enlarged and diffluent, contained an infarctus in its upper and middle regions, pretty near the hilus. On the surface of the kidneys, there were small ecchymoses and slight depressions. Some of the larger renal capillaries were filled with a matter, which when examined under the microscope seemed to be finely granular dust.

The mucous membrane of the intestine presented small ecchymoses which probably depended on the same cause as the ecchymoses on the pulmonary and renal surfaces. There was no morbid alteration of Peyer's glands.

Here then, Gentlemen, was a number of lesions, existing in different organs, which exactly corresponded with the symptoms observed during life. The mitral valve was thickened, and presented a very marked injected appearance: on its auricular surface, there was an excavation sufficiently deep to receive the extremity of one of the fingers. There were granulations at the bottom of the ulcerations; and the substance covering the ulceration, when examined through the microscope, was found to be composed to a great extent of fine greyish granulations, and detritus of a more or less formed description. The entire substance, says the observer, resisted the action of acids and alcalies.

Gentlemen, this vast ulceration was probably the result of the opening of an atheromatous cyst. This opinion is strengthened by the following fact. At a point very near the ulceration, there existed a slight mammillary prominence, from which, on being cut into, there flowed a thick yellow matter composed of numerous very fine granulations, fragments of cells, cell-germs, and conjunctive tissue. All the parts were pale; but they resisted, to a great extent, the action of acids and alcalies, a circumstance which seems to show that fibrin enters only to a very limited extent into the composition of these exudations. Finally, the microscope likewise revealed in

their parts the presence of fat-globules and some crystals the products of the fatty matters.

What are we to conclude from this clinical and microscopical analysis? The inference is, that the valvular ulceration had poured into the blood fibrous and other products, which in the spleen, liver, and kidneys, had obliterated the vessels of medium size, so as to produce infarctus and obstruction of the capillaries to such an extent as to cause ecchymoses on the surface of these organs, and in the thickness of the cutaneous and mucous derma. Again, the organic and other exudations, except the fibrin, had probably caused a modification of the blood, which would explain the diffluence of the spleen and the typhoid symptoms.

To conclude—and here is the point of greatest interest in this remarkable case—the microscopic and chemical examination of the blood showed that it contained products analogous, in all respects, to those detected in the mitral valve and obstructed vessels.

As is observed in septicemia, the blood was everywhere nearly in a viscous state—almost thready—and resembling treacle or gooseberry jelly. The blood contained in one of the femoral arteries, having been collected in a tube, was submitted to microscopical examination: besides the red globules, the white globules, and the fibrine, the presence of molecular granulations, granular globules, fat-globules, and fragments of the fibres of conjunctive tissue were detected. Similar elements existed in the centre of the clots in the splenic, renal and hepatic arteries. Similar elements were also met with, though sparingly, in the blood of the coronary arteries. These elements, like those which constituted the small valvular abscess, were rendered pale but were not dissolved by the acids, while they entirely resisted the action of the alcalies.

Such, Gentlemen, are the two cases of which I have been desirous to explain to you the principal details. They are of a nature to fix in your minds the morbid changes which occur in ulcerating endocarditis; and will likewise explain how the blood becomes infected in such circumstances. Such are the facts which have to be added to the septicemic class of affections, when the patients present typhoid symptoms which cannot be referred to dothienteria, to well-marked infectious fever, or to malignant jaundice, and when therefore you must investigate with care whether the heart does not present some valvular lesion to explain the presence of typhoid symptoms.

Finally, if you are of opinion that the symptoms are independent of any rheumatic affection, this special organic etiology of blood poisoning will justify you in suspecting that a valvular alteration of the heart is the cause of symptoms which could in no other way be satisfactorily explained.

Gentlemen, I have been constrained to place before you the doctrine of ulcerating endocarditis professed by a certain number of most remarkable physicians who attribute to embolism the local and general symptoms observed in this affection. I cannot, however, conceal from you the fact, that this doctrine does not command the suffrages of all observers—I cannot conceal from you that savans of the highest distinction, at the head of whom are Bouillaud, Hardy, and Béhier, attribute the general and typhoid symptoms of endocarditis to a primary morbid condition. Hardy and Béhier in their "*Traité de Pathologie Interne*" say:—"The ulceration and softening of the endocardium are the results of a general vitiation of the economy at the time when the inflammation of the membrane manifests itself; and which inflammation seems unable to produce any other than an infecting ulceration and the general phenomena indicated. It is, in fact, simply an endocarditis in a cachectic subject." Duguet and Hayem, distinguished young physicians, take a very similar view of the question: they hold that in these cases there is an aggravated malignant embolism characterised by multiple visceral lesions, particularly by lesions of the valves of the heart. The existence of the typhoid state from the beginning of the attack would be thus explained, and the visceral infarctus would only be regarded as secondary lesions, the remote consequences of ulcerations of the endocardium.[1]

In favour of the doctrine that the typhoid state arises from spontaneous embolism supervening suddenly, and not in any way the consecutive result of the passage into the blood of disintegrated fibrin coming from a valvular lesion, may be cited perfectly authentic autopsies performed in the hospital service and under the eye of Dr. Bouillaud, in which it was found that there was neither any sort of ulceration of the endocardium, nor any vestiges of partially eroded fibrinous vegetations, although during life there had existed a most decidedly typhoid condition. This occurred in the case of a female

[1] Duguet and Hayem:—Mémoires de la Société de Biologie: 1865.

patient whose history was communicated by Dr. Auguste Voisin to Dr. M. L. Martineau.[1]

Consequently, we must not suppose that the doctrine of embolism explains all the possible phenomena of malignant endocarditis.

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[1] Martineau :—Des Endocardites : Paris, 1866. An excellent work in which modern theories are discussed and interesting cases narrated.

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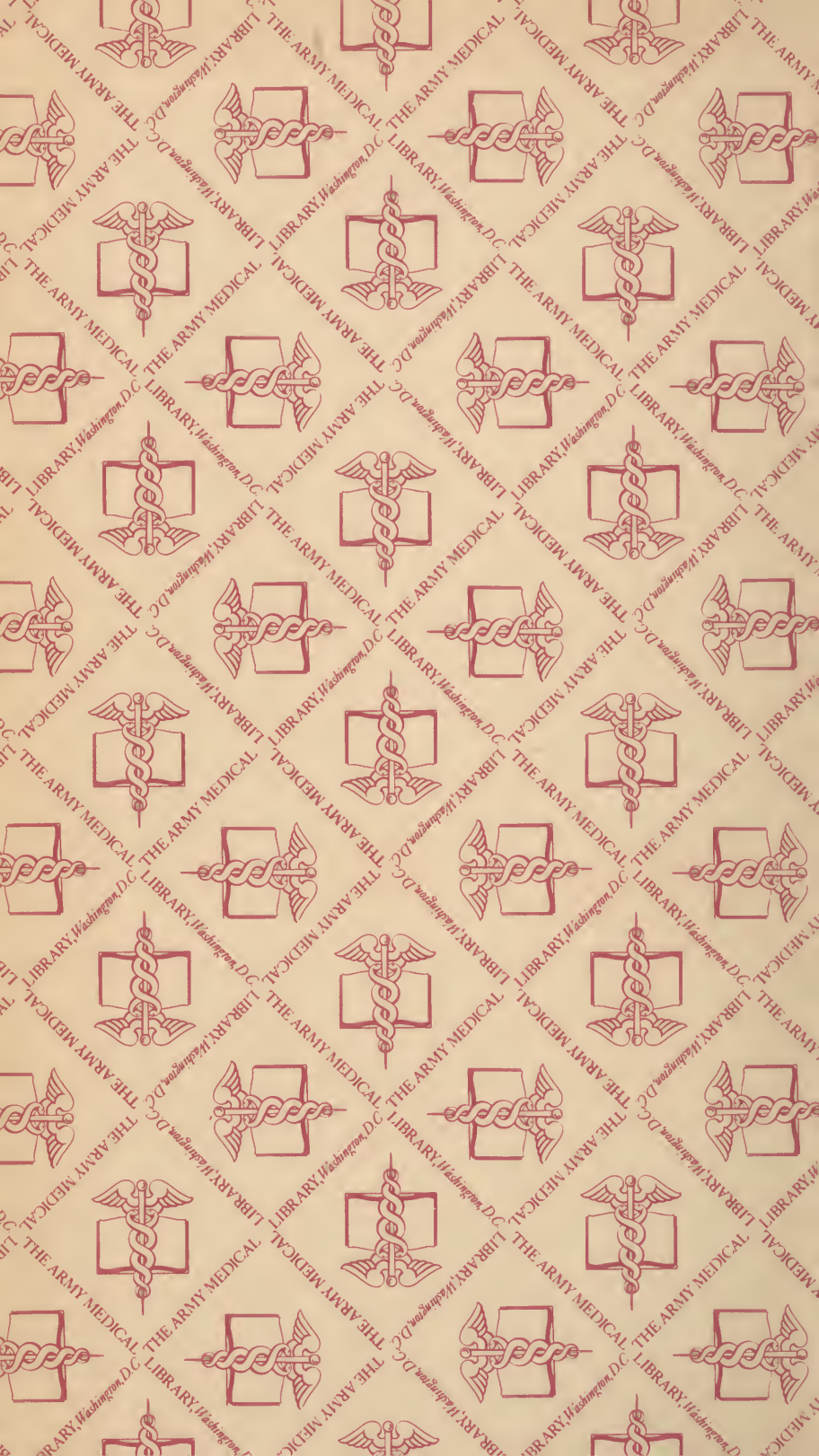
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